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<https://doi.org/10.7275/mtt2-h459> https://scholarworks.umass.edu/dissertations_2/165

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Cultivating Communities of Practice to Develop Local Preparedness for Climate Change

A Dissertation Presented

By

KONDA REDDY CHAVVA

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

September 2014

College of Education

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Cultivating Communities of Practice to Develop Local Preparedness for Climate Change

A Dissertation Presented

By

KONDA REDDY CHAVVA

Approved as to style and content by:

Cristine A. Smith, Chair

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DEDICATION

Field Facilitators are the face of development interventions in the communities in which they work. I have been fortunate to work with and train several dedicated field facilitators who relentlessly work to establish critical relationships with communities and endure several hardships in building communities capacities.

Hope this work will be a small addition to the umpteen development strategies designed to improve field facilitators capacities.

ACKNOWLEDGEMENTS

I am extremely grateful to David W. Kahler for his time and effort in mentoring me over the years and being a pillar of support at each stage of the dissertation. I particularly thank David for his painstaking efforts to read and edit several drafts of my thesis. I am also grateful to my colleague and co-researcher Seela Sivaprasad for his unconditional support in the field research, data management and analysis.

My sincere gratitude to my dissertation Chair Cristine A. Smith, Committee members Gretchen B. Rossman, and Daniel S. Gerber both for their invaluable guidance, encouragement and feedback. I am very thankful to Cristine for her invaluable inputs and meticulously reviewing the various drafts of my dissertation and ensuring that the dissertation was tightly argued and presentable. I wish to thank Gretchen for her continued support through all my stay at the Center and dissertation research. I thank Dan for graciously agreeing to join my committee at a late stage and helping me accomplish my goal. I thank Donal Carbaugh and Sharof F. Rallis for their invaluable inputs at different stages of the dissertation.

I thank Peter E. Kenmore, Food and Agriculture Organization (FAO) Representative in India for his encouragement and providing valuable feedback on my dissertation. I thank Satya Priya, the National Programme Coordinator, Land and Water Management, FAO India, V. Paul Raja Rao, Executive Director, Bharathi Integrated Rural Development Society (BIRDS), and S.V. Govardhan Das, Project Manager, Strategic Pilot on Adaptation to Climate Change (SPACC) Project for providing me the opportunity to work on the SPACC project and encouraging to pursue my dissertation research. I am particularly grateful to Ch. Rambabu and Pathan Nazeer Khan for their

unstinted support and encouraging me to work with their field unit teams for the dissertation. Special thanks to T. Venugopal and G.S. Madhu Kumar who supported me throughout the field research by encouraging their respective team members to participate in the action research. I wish to express my appreciation to the field facilitators and the farmers of Gram Vikas Samstha (GVS) and People's Activity and Rural Technology Nurturing Ecological Rejuvenation (PARTNER) field units for actively participating in the action research, generating critical data, and sharing their perspectives.

I am very thankful to P.S. Rao, former National Programme Coordinator, Land and Water Management, FAO India, and K.A.S. Mani, former Project Manager, Andhra Pradesh Farmer Managed Groundwater Systems (APFAMGS) project for their generous support and selfless contribution to my professional development. A special thanks to all whose support and friendship helped me to stay focused on the Doctoral program and provided me the encouragement to pursue my study.

Finally and most importantly, I thank Aparna for all her sacrifices, constant support, and shouldering full responsibility in caring for Kaarthikeya as I focused on my dissertation research.

ABSTRACT

CULTIVATING COMMUNITIES OF PRACTICE TO DEVELOP LOCAL PREPAREDNESS FOR CLIMATE CHANGE

SEPTEMBER 2014

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The goal of this research was to study the effectiveness of field facilitators' (FFs) community of practice in improving ways in which FFs and farmers communicate and work together to strengthen farmers' climate change preparedness through identifying locally suitable adaptation strategies in drought-prone districts of Andhra Pradesh State in India. In development initiatives like the one studied, FFs are often the key liaison person with each community—farmers in this case. FFs interact regularly with farmers, with whom they establish and sustain critical relationships over time. Further, they take the lead in building farmers' capacities by contextualizing technical information that professionals provide to the farmers. Thus, they are uniquely positioned to directly interact with and broker the communications between farmers and technical professionals. One way to improve exchanges between FFs and farmers is through FFs

cultivating a *community of practice*, defined as a group of people with a shared interest pursuing common activities and learning to do them better.

The research addressed the question:

What happened to (a) farmers' ownership of groundwater management and weather monitoring, and (b) FFs' and farmers' communications and work together when project staff used the concept of communities of practice to initiate new project interventions?

The study took place between August 2011 and October 2012 in the Strategic Pilot on Adaptation to Climate Change (SPACC) project. With a sample of eight FFs and seven farmers, I used interviews, field observation, review of FFs' reports, and focus group discussions to collect data to answer the research question. I analyzed the data using Wenger, Trayner, and Laat's (2011) framework on 'value creation in communities and networks'. The study found that the FFs' community of practice led to development of a shared repertoire of skills and resources, improved their training skills, and strengthened relationships amongst themselves. Also, the FFs' collective practices (planning, observing, reflecting, and documenting) showed promise in engaging farmers in a sustained manner to influence farmer ownership of groundwater management and weather monitoring. This study confirms the value of taking an action research approach to enable a community of practice to solve problems within a project.

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CHAPTER 1

INTRODUCTION

Problem Statement and Research Context

Problem Statement

Agriculture plays a significant role in the Indian economy as it provides employment to approximately 52% of the Indian population (GoI, 2014, p. 171). High agricultural production is perceived to be critical for domestic price stability and food security of the country. Sixty (60) % of the crop area is rain-fed (MoEF, 2004) and over 87% of the farmers are small and marginal land holders with land size less than five acres (Posani, 2009, p. 21). Given the small landholdings and the nature of rain-fed agriculture in India, the chances that small and marginal¹ farmers will meet the demands of a growing population seems slim, even under the most favorable climatic conditions. If climate change leads, as predicted, to increased variations in surface temperatures and rainfall patterns leading to crop failures, farmers are even more at risk and lack resources to absorb the shocks of crop losses.

The current scenario is particularly worrisome as climate change models forecast a greater variability in rainfall and availability of water. The Government of India admits that the country has low adaptive capacity to withstand adverse impacts of climate change (MoEF, 2004). Climate change could cause degradation of the environment, agriculture productivity and livelihoods, and threaten food security. This, coupled with poor infrastructural facilities, weak institutional mechanisms and inadequate financial

¹ In the official statistics of India “small” farmers are defined as cultivating more than 1 hectare but less than 2 hectares of land or less, “marginal” farmers as cultivating less than one hectare.

resources, could undermine the achievement of vital national development goals (MoEF, 2004).

Both the Food and Agriculture Organization (FAO) of the United Nations (UN) (2008) and International Food Policy Research Institute (IFPRI) (2009) suggest that countries should develop meaningful and reliable databases and climate system models using locally collected data on climate, agriculture, natural resources, and markets. This undertaking will require a collaborative effort by the scientific community, farmer trainers (hereafter called *field facilitators or FFs*), and farmers in their local communities. However, lack of effective communication between field facilitators and farmers undermines farmer ownership of solutions to problems, which is critical to generate usable local data and identify adaptive climate change strategies.

The challenge is to improve ways by which field facilitators and farmers communicate and work together to strengthen farmers' climate change preparedness through identifying locally suitable adaptation strategies. This research sought to create and test a set of processes and procedures to help field facilitators become better at communicating with farmers, organizing and managing farmer learning opportunities, reflecting on their own experiences while working with farmers, applying the learning from their reflections on their interactions with farmers to improve farmer learning over time, and at creating better mechanisms for reporting the outcomes of their work to their supervisors and other individuals in the project hierarchy. The goal of this dissertation is to contribute to improved understanding of the strategies that increase meaningful interaction between farmers and the field facilitators who strive to improve farmer preparedness to respond to the highly probable impacts of climate change.

Organization of this Dissertation

In Chapter One, I present the rationale of the research and the problem that this research addressed. Then I briefly discuss climate change and implications for food production and food security. Next, I discuss the current agrarian crisis in India and how ineffective agriculture sector policies have further exacerbated it. I then follow with a discussion about implications of climate change for Indian agriculture and allied sectors. I conclude the chapter with a discussion of the need to build farmers' adaptive capacities and a brief overview of the past and current efforts made to build farmer preparedness for climate change in Andhra Pradesh State in south India.

In Chapter Two, I discuss several theories from existing research relevant to farmer and community participation. Following this, I discuss the usefulness of communities of practice in introducing FFs to new practices and assessing their influence on how FFs and farmers communicated and worked together.

In Chapter Three, I discuss the action research design for the study, the research methods and how data were collected, managed and analyzed in the conduct of the study.

In Chapter Four, I present the research findings. I begin with a discussion of findings from baseline data and follow it up with a discussion of the findings from action research interventions. The action research interventions included: FFs' use of collective practices—planning, observing, reflecting, and documenting—to cultivate a community of practice; and project interventions intended to improve farmers' ownership of groundwater management and weather monitoring.

In Chapter Five, I focus on the conclusions drawn from the research and implications for future research.

Research Question

The research addressed the larger conceptual concern of: *What happened to (a) farmers' ownership of groundwater management and weather monitoring, and (b) FFs' and farmers' communications and work together when project staff used the concept of communities of practice to initiate new project interventions?*

The specific questions were:

- How did the action research interventions² influence the way field facilitators and farmers communicated and worked with each other, according to FFs and farmers?
- How did the action research interventions influence farmers' ownership of groundwater management and weather monitoring, according to FFs and farmers?
- What other factors, besides these project interventions, influenced FFs' and farmers' communications and work with each other, and influenced farmers' ownership of groundwater management and weather monitoring?

I used Wenger, Trayner, and Laat's (2011) framework on 'value creation in communities and networks' to help assess the "immediate", "potential", "applied", and "realized" value of FFs' community of practice. This assessment used multiple sets of

² The action research interventions include: (a) FFs use of collective practices—collective planning, observing, reflecting, and documenting—to cultivate a community of practice; and (b) project interventions—CCAC vision building exercise and action plan 2012, orientation on roles and responsibilities, formation of CCAC sub-committees—implemented to improve farmers' ownership of groundwater management and monitoring of weather parameters.

data generated by the study to portray a holistic picture of the value that the FFs' community of practice created for them and for the farmer participants.

Research Context

I conducted the research in the Strategic Pilot on Adaptation to Climate Change (SPACC) project which was implemented in seven drought prone districts³ of Andhra Pradesh, funded by agencies of the United Nations (UN). The project goal was to strengthen the knowledge and capacities of communities to respond to climate variability and change impacts in pilot hydrological units (HUs) in seven drought-prone districts of Andhra Pradesh. The project was implemented in nine hydrological units, spread over 143 habitations covering about 134,442 hectares, with a population of 204,567. The project started on December 6, 2010 and lasted 3 years.

The Food and Agriculture Organization managed and disbursed the grant and supervised and provided technical guidance to the project. A regional Indian organization was responsible for execution of project activities, day-to-day monitoring and financial management. Nine partner non-government organizations⁴ in the region implemented the project activities, each with a field unit to implement the project activities. A field officer coordinated the field unit, supervising a team of five field facilitators (FFs) who implemented project activities. The FFs in each team included:

- A Professional Land and Water Management resource person, an agriculture graduate;

³ Anantapur, Chittoor, Kadapa, Kurnool, Mahabubnagar, Nalgonda, and Prakasam

⁴ Names of the nine partner non-governmental organizations and their field unit locations are enclosed as Appendix E

- A Professional Non-Formal Education resource person, a social science graduate with relatively more experience in working with and training rural communities; and
- Three Village Coordinators, all social science graduates.

Despite the different designations, all five individuals worked in close coordination when implementing project activities. Their roles overlapped constantly. Therefore, for purposes of this study, I coined a common term—field facilitators (FFs)—for all the five.

The SPACC project facilitated the formation of community-based organizations called Climate Change Adaptation Committees (CCACs). CCACs are farmer institutions at the village level and represented populations vulnerable to drought and groundwater scarcity. The habitation-level CCACs were federated at the Hydrological Unit (HU) level to form HU-CCACs. At the HU level, the CCACs served as a platform for populations vulnerable to drought and water scarcity because of climate change/variability. As such, the CCACs were key farmers' institutions that managed the climate monitoring system at both the habitation and hydrological unit level and disseminated information and knowledge on climate variability and change.

CCAC members were small landholders either with or without access to borewell irrigation. They were “traditional” agriculturists; i.e., their families had been engaged in agricultural activities for several generations. For the majority of these farmers, agriculture was the primary livelihood. These farmers raised crops in two agricultural seasons—traditionally wetter kharif season and drier rabi season. In kharif, their primary water source was rain from the southwest monsoon which was sometimes supplemented

with borewell irrigation. In rabi, they primarily relied on borewell irrigation to raise crops. CCAC members participated in the project's community meetings, trainings and other events with the objective of building their knowledge about climate change and enhancing their climate change preparedness and decision-making skills. CCACs were vital to the implementation of the project at the community and HU level. Some CCAC members volunteered to provide small pieces of their land for installation of weather monitoring equipment. Additionally, they collected daily weather data, recorded it in data books, and disseminated it by updating the display boards. Similarly, a few of them volunteered to provide their land to set up crop-based experiments to test the feasibility of adaptation options. Likewise, farmers participated in Farmers Climate Schools (FCS) to improve their understanding of the concepts of climate change and variability, increase their awareness of successful adaptation measures, and make better informed decisions to cope with climate change/variability.

Field facilitators, who occupied the lowest level in the project staff hierarchy, were nonetheless the project's key liaison persons with each community—farmer participants and the CCACs. They were hired by the PNGOs. They were usually university graduates with experience in community work. Often they came from farm families and were quite conversant with norms and values of local communities. They resided in local communities or in adjoining towns. Their proximity and identification with local communities was important in their recruitment. FFs interacted with the farmers with whom they established and sustained critical relationships for effective implementation. Additionally, they took the lead in mobilizing farmer participants for project trainings and meetings. Furthermore, they organized trainings and workshops to

build farmers' knowledge and skills. Therefore, positive relations built and sustained by FFs' and farmers were critical to farmer participation in project activities.

In particular, FFs facilitated formation of CCACs, which required working with local communities to identify groups vulnerable to impacts of climate change and ensuring adequate representation by these vulnerable groups (including women) in CCACs. They participated in CCAC meetings, monitored their functioning and provided assistance as needed. This included assisting CCAC office bearers in setting meeting agenda, encouraging participation by all members in the discussions, exploring options and suggesting ways to resolve conflicts, aid in reaching group decisions on key issues concerning the CCAC and its individual members, and ensuring maintenance of records and documentation of meeting minutes.

FFs were periodically trained and provided technical inputs by the project to build their skills and capacities to improve their interactions with CCAC members. In turn, FFs organized capacity building trainings for the CCAC members to build the institutional capacities of the CCACs and facilitate functional linkages with other community based organizations (CBOs), scientific and technical institutions, and local-level officers to strengthen the community's resilience to climate change and variability. Further, they introduced farmers to new agricultural skills and practices to improve their adaptive capacity in the face of climate change and variability. These included: organizing trainings for farmers on monitoring weather parameters, recording and disseminating weather data, and helping farmers' perceive the impact of weather parameters on crop growth and agricultural operations; facilitating farmers-officers and scientists workshops to identify suitable adaptation options; assisting farmers to set up field experiments to test

the feasibility of different adaptation options; helping farmers monitor the field experiments to identify key learning and successful adaptation options; organizing Farmer Climate Schools to demystify the concepts of climate change and variability; increasing farmers' awareness on successful adaptation measures; and helping them make better informed decisions to cope with climate change and variability. In all these ways the FFs were the face of the project at the community-level. Therefore, the effectiveness of their interactions with the community was the key to successful project implementation.

Additionally, field facilitators played a critical role in influencing interactions among other key stakeholders—*i.e.* farmers and project staff at various levels, which included technical experts. FFs were uniquely positioned to directly work with and broker the interactions between farmers and technical experts, both from the project and from other agencies. FFs played a critical role in facilitating the identification of community issues and farmer learning needs, the interrogation of technical information to demystify and contextualize it to farmer needs and the local socio-cultural environment, engaging farmers in the learning process, and providing “empowering” support to sustain their participation in the learning. Additionally, they brought to the attention of the project's management and technical experts emerging issues and concerns affecting farmers' participation, helped project management identify feasible strategies or solutions to address farmers' concerns for sustained engagement of farmers in project activities. Thus, they helped the project's management develop an essential understanding of the local issues. Usually, this was carried out in the context of reporting to the project's management the effectiveness of various project interventions.

Significance of the Research

As action research, the study had some immediate effects on practice, as well as providing information to answer the research questions. Through the study, field facilitators had space to build a set of collective practices—collective planning, observing, reflecting, and documenting farmer training activities—to improve their interactions with CCAC members (refer to *Appendix A* for dissertation logic model). These practices were built during CCAC capacity building activities. Given their facilitating role, field facilitators occupied the institutional-social space where they could positively influence the mindsets of both farmers and technical professionals. Over the longer term, the findings of this research should help practitioners and policymakers improve designs, structures and support through which field facilitators and farmers communicate and work together in building farmer and community preparedness for climate change. The existence of new strategies for ameliorating the short and long-term effects of climate change through enhanced collaboration, negotiation, and participation in a community of practice (see page 48) will make it easier to collect and make use of local data/information to generate and disseminate adaptive strategies to climate change.

Additionally, the findings of this research offer strategies for new projects building on the potential created by the previous projects (see page 28) or an existing project undertaking mid-course correction and to address residual effects of the previous intervention, such as farmer adoption of practices introduced and issues in communication between farmers and FFs.

Climate Change and Implications for Food Production and Food Security

In this section, I discuss the definition of climate change and the potential impacts and consequences of climate change for agriculture food security and vulnerability of rural populations more globally. In the discussion, I bring the global analysis down to the local area where the study took place.

Definition of Climate Change

According to the Intergovernmental Panel on Climate Change (2007), “Climate change refers to a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity” (Bernstein, 2007, p. 30).

The United Nations Framework Convention on Climate Change (UNFCCC), to which the Government of India is a party, refers to climate change as “a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods” (Bernstein, 2007, p. 30).

Human activities since the advent of the industrial revolution, and particularly in the past 50 years, have predominantly contributed to an increased concentration of greenhouse gases, which are the primary drivers of the current global warming (Bernstein, 2007). In 2007, India ranks fifth in aggregate Green House Gas (GHG) emissions in the world, behind USA, China, EU and Russia (INCCA, 2010). Unfortunately, the world’s poor and food insecure (whose actions have least contributed to global warming) are the

most vulnerable to the potential impacts of climate change and have the least capacity to adapt. Therefore, building their preparedness to adapt to climate change is critical to improving farmers' resilience and reducing their vulnerability.

Impacts of Climate Change

The IPCC's fourth assessment report suggests that, although some areas will benefit from global warming in the short term, most areas will be adversely affected. Also, the report emphasizes that even "those areas that do benefit from global warming in the near to mid-term will eventually also suffer from declining productivity" (Glantz, Gomez, & Ramasamy, 2009, p. 8). Consequently, "the resilience⁵ of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g. flooding, drought, wildfire, invasive pests, ocean acidification) and other global change drivers (e.g. land-use change, pollution, fragmentation of natural systems, and over-exploitation of resources)" (Bernstein, 2007, p. 48).

Various sections of the assessment report indicate that changes in the hydrological cycle will affect agriculture in general and food security specifically. "Migrations forced by climate change (for example, excessive heat, increased evaporation rates, or prolonged drought-induced crop failures, or flood) will further burden the already stretched agricultural resources and food supplies of regions that have managed to sustain productivity" (Glantz, Gomez, & Ramasamy, 2009, p. 8).

⁵ FAO defines *resiliency* as the capacity to cope successfully in the face of significant future risk. IPCC AR4 (2007) defines resilience as "the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change." (p. 37)

Implications for Food Security

Climate change will adversely affect agricultural production and thereby undermine food security both at the global and local levels. FAO defines food security as “A situation that exists when people have access to sufficient amounts of safe and nutritious food for normal growth, development and an active and healthy life. Food insecurity may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level.” (FAO, 2008, p. 12). FAO’s definition of food security has four dimensions – food availability, access to food, stability of food supply and utilization of food. Though market forces may govern food security in the short term, “stability and sustainability of food production and food supply, environmental factors become crucial” in the long run (p. 2) and climate change will negatively affect all dimensions of food security.

Vulnerability

“Vulnerability is generally defined as a function of risk and exposure. Vulnerability with regard to climate change implies that people are exposed to aspects of climate that are changing in ways that will either generate or increase risk, which implies a potential loss of something valued” (Glantz, Gomez, & Ramasamy, 2009, p. 17). Food production is subject to vulnerability because of changes in suitability or availability of arable land and water and because of the inability of crops and animals to adjust to relatively sudden climatic changes. Small-scale, rain-fed farming systems could be particularly vulnerable to climate change (FAO, 2008). For food security, the risk is

reduced access to food supplies leading to poorer nutrition than would be expected under normal climate conditions. The world's poor and food insecure are the most vulnerable to the potential impacts of climate change and have the least capacity to adapt. They are often highly exposed to natural hazards, greatly dependent on climate-sensitive resources and have limited economic and technological options. The ability of individuals to cope with climate change impacts depends on economic development and institutional support as well as cultural and socio-economic factors, such as household composition and distribution of household assets.

Vulnerability to climate change is also gender differentiated (Lambrou & Piana, 2006). The risks associated with climate change threaten to reinforce gender inequalities and even erode progress that has been made towards gender equality in many developing countries. Poor women's limited access to resources, restricted rights, and limited mobility and voice in community and household decision making can make them much more vulnerable than men to the effects of climate change (UNDP, 2010). Lambrou and Piana (2006) point out that, in the event of an increase in water scarcity caused by climate change, women would most likely be expected to bear the additional burden of looking for water and ensuring their family's food security. Additionally, they argue that in general, women represent the majority of low-income earners who are imprisoned in cycles of dependency and have to struggle each day to meet their household needs and take care of their families. They indicate that impacts of more frequent extreme weather events will be gender differentiated, including:

- Increased male migration, which could lead to an increased burden of women's responsibilities and chores both inside and outside the house;

- Changes in cropping and livestock production that could further accentuate gender stereotypes in division of labour and income opportunities; and
- Increased difficulties in access to basic resources needed for day-to-day family upkeep, such as fuel wood and water that could lead to increased workload for women and children.

Lambrou and Piana (2006) conclude that female farmers contribute less to climate change than male farmers but are more vulnerable to it. Kelkar's study on how Adivasi women cope with climate change (2009) points out that climate change presents an additional challenge to most indigenous peoples, particularly women. Often women and marginalized groups, including ethnic minorities, have little influence over decision-making processes. In addition, women lack resources or access to credit and property rights, thus increasing their vulnerability and reducing their adaptive capacity (FAO, 2009, p. 3).

The Indian Agrarian Crisis and Climate Change

The Government of India has acknowledged that India is particularly vulnerable to the adverse impacts of climate change since a majority of the Indian population is dependent on agriculture and allied sectors, which are climate sensitive (MoEF, 2004). Despite providing a livelihood for a majority of the population, the share of agriculture in the gross domestic product has been declining steadily from 36.4% in 1982-83 to 13.9% in 2013-14 (GoI, 2014, p. 137). Increased growth in this sector would push the Gross Domestic Product (GDP) upwards and make that growth more inclusive and equitable as it employs a large labor force and supplies raw material to agro-based industries (MoEF,

2004). In addition, high agricultural production is critical for domestic price stability and food security of the developing economy and burgeoning population (MoEF, 2004). As the population increases, demand for food grains also grows, and the onus of addressing this growing demand for food grains resides with the farmer, an overwhelming majority of them are small and marginal landholders in India.

To compound the situation “Indian agriculture is monsoon dependent, with over 60% of the crop area under rain-fed agriculture, which is highly vulnerable to climate variability and change.” (MoEF, 2004, p. 59). The southwest monsoon is the most important feature of the Indian climate because it delivers over 75% of the annual rainfall in a span of four months (MoEF, 2004; Prabhakar & Shaw, 2008). If climate change leads to variations in surface temperatures and rainfall patterns leading to crop failures, small farmers are even more at risk as they lack resources to absorb the shocks of crop losses. Their current inability to cope with the consequences of climate change can and does adversely affect the stability of food supply and access to food in the country.

With the introduction of the Green Revolution in India, agriculture increasingly became dependent on groundwater resources (Varshney, 1995). More than 55% of all irrigation water needs are met from groundwater. Additionally, more than 80% of all rural domestic water supplies and all rural cottage and small-scale industries are dependent on groundwater (Parikh, 2007). This dependence has forced more farmers and rural water supply agencies to invest huge sums on dependable irrigation sources in the form of drilling of borewells. It is estimated that currently there are over 26 million borewells in the country (Mukherji & Shah, 2005, p. 54). More than 15% of these wells have been abandoned in recent years due to the lowering of groundwater levels or

deterioration in groundwater quality. Another 15% of the wells are functional only for three to six months of the year (Mukherji & Shah, 2005, p. 54). Over-exploitation of groundwater is thus a matter of great concern.

New crops, fertilizers and farming practices put in place by the Green Revolution replaced farmers' traditional knowledge base (Mishra, 2007; Shiva, 2002). Over time, farmers, who were deskilled by the Green Revolution, have become more and more dependent on external assistance in dealing with everyday agricultural issues (Mishra, 2007).

Political and economic factors have deeply impacted agricultural production and groundwater use in post-independence India. Indiscriminate use of groundwater and overdependence on external inputs for agricultural production has led to the current agrarian crisis. The current scenario is particularly worrisome as climate change scenarios forecast a greater variability in rainfall and availability of water (MoEF, 2004). This complicates the Indian Government's efforts to stabilize food prices and ensure food security. For example, devaluation of the rupee in the 1990s meant that Indian agriculture produce became cheaper and thus more attractive in the world market. This led to an export drive and a major shift in farming practices. Farmers moved away from growing a mixed bag of subsistence crops to focusing on raising single cash crops⁶ (Shiva, 2002; McGhie, 2005). This move to grow cash crops (such as cotton, sugarcane, and floriculture, for example) demanded hugely increased farm inputs – water, fertilizer, and pesticides—that also had a significant impact on farmers' debt (McGhie, 2005). When borewells started to dry up, farmers increasingly resorted to borrowing money to drill deeper or alternate borewells. Farmers have faced an erosion of their real income as the

⁶ Cash crop is a crop grown for profit.

aggregate price index for consumer goods has been higher than growth in price index for agricultural commodities. The steep rise in agriculture input costs, volatility in the markets, withdrawal of agricultural support services, and lack of access to banking credit has plunged the farmers into deep debt (McGhie, 2005).

Presently, there is no strong advocate for the small farmer in India. Post-independence land reform policies were left in the hands of each state. In the absence of a national policy, land reforms failed and resulted in a further structural divide between rich and poor farmers (Varshney, 1995). The communalization of politics in India in the 1990s further diluted the political obligation of the existing parties to appeal to ‘the village’ or ‘the farmers’ (Posani, 2009). Ethnic and communal affiliations amongst farmers have weakened the farmers’ movements and their bargaining power as an undivided farmer group.

Ineffective Agriculture Sector Policies

In this section, I discuss three areas where ineffective agriculture sector policy development impacted directly on the project context in which the study took place. The discussion is intended to help the reader better understand the weak policy backdrop for the project and to provide information on specific issues that emerge from the analysis of data gathered from both field facilitators and farmers during the study.

Groundwater: The current dependence on groundwater irrigation started largely as a viable alternate option to surface irrigation (Mukherji & Shah, 2005; Sinha, Sharma, & Scott, 2006; World Bank, 2009). Surface irrigation infrastructure requires massive public investment and involves complex institutional mechanisms. However,

private individual farmers, drilling borewells on their farms and controlling resource usage, largely financed groundwater irrigation. This absolved the government from investing in and creating a surface irrigation infrastructure.

Effective management of the groundwater resource has been a failure largely because of groundwater users' inability to understand the resource dynamics. Access to groundwater is through right of capture. This open access nature of the resource, its invisibility, and consequent inability of groundwater users to perceive the extent and quantity of the resource and their efforts towards profit maximization led to its overdevelopment (Moench, 1992). Given that the government did not incur any costs in exploiting or providing access to the groundwater resources, it did not make efforts to regulate resource use. Thus, it is a typical case of failure of common property resource management (Sinha, Sharma, & Scott, 2006).

Demand for groundwater in agriculture depends upon what farmers grow. Market demand, market linkages, and economic returns all influence farmers' crop choices. Over the past few decades, government agricultural policies have inadvertently encouraged production of water-intensive crops. In striving to achieve food security, government input subsidies and procurement policies have undermined sustainable management of natural resources (Sinha, Sharma, & Scott, 2006).

Electrical power distribution: To facilitate groundwater access for agriculture and socio-economic development of the rural areas, electricity is provided at a very low cost. Over the years, the share of the agriculture sector in electricity sales went up, while revenue realization has remained extremely low (Sinha, Sharma, & Scott, 2006). The high commercial losses undermine investment in distribution infrastructure.

Consequently, the quality of power supply has been characterized by low voltage, frequent outages, breakdowns, burnouts, and restriction of supply to non-peak hours. Unreliability of electricity supply encourages farmers to pump water during all hours when electricity is available (Sinha, Sharma, & Scott, 2006). This contributes to overexploitation of the groundwater resource and wastage of precious water resources.

Electrical power distribution policy interventions have undermined revenue collection from agricultural users. Governments have either used a fixed rate system or populist measures such as subsidized tariff, free electricity supply, or waiver of electricity dues. To reduce transaction costs in meter reading and bill distribution across millions of pump users dispersed across the countryside, electricity boards charge farmers a flat rate based on the installed pump capacity. Farmers often underreport the capacity of their pump sets and thus underpay their dues. Pricing of electricity for agricultural users, across several Indian states, is not only about farmers' readiness to pay, but also about politicians' willingness to charge (Sinha, Sharma, & Scott, 2006).

Food subsidies: To ensure food security, the Government of India pursues a twin strategy of offering incentives to farmers to produce food grains and providing food grains at affordable prices to vulnerable segments of the population (Sinha, Sharma, & Scott, 2006). The government offers a minimum support price (MSP) to farmers and procures food grains through the Food Corporation of India (FCI). The minimum support price is offered to farmers in the form of assured market for select food grains. Analysis of the food subsidies offered to farmers show that relatively high MSPs and procurement of grains with no upper bounds on quantities has skewed cropping patterns in favor of high water consuming crops such as wheat and rice. Nearly half of the paddy

procurement was from the states of Haryana and Punjab, followed by Andhra Pradesh and Chattisgarh. However, mostly large farmers in these states have cornered the benefits of the subsidies, leaving out small and marginal farmers (Sinha, Sharma, & Scott, 2006).

Economic and Social Consequences of Over-Exploitation of Groundwater

Helping farmers better understand the economic and social consequences of groundwater over-exploitation is thought to be key to helping change farmers' attitudes and practices related to groundwater use. These consequences include decreased quality of drinking water, deterioration of agricultural livelihoods, degradation of the environment, financial difficulties, and instability in the availability of groundwater. Helping field facilitators develop communications strategies that promote informed and equitable discussions of these consequences has been a goal of the SPACC project since its inception and is considered a major contribution to the development of individual and collective preparedness for the impacts of climate change.

Decreasing Quality of Safe Drinking Water: Over 85% of drinking water supplies in rural areas are dependent on groundwater. Indiscriminate use of groundwater resources has resulted in a steep fall in water levels and more aquifers have become unsustainable. This threatens water supply for irrigation as well as domestic and drinking water consumption. Increasingly, large number of habitations covered by rural water supply schemes slip back into the "partial covered" or "not covered" categories due to inadequate resources (World Bank, 2009). Further, overexploitation is leading to pollution of the resource and making it unsafe for drinking water use. Given the critical importance of water in daily life, further decline of water levels will not only threaten the

achievement of the safe drinking water target, but also undermine improvements in education, health and nutrition, gender relations, and poverty reduction (World Bank, 2009).

Deteriorating Agricultural Livelihoods: About 15% of the groundwater resources used for irrigation have been identified as overexploited zones (World Bank, 2009). Farmers in these areas sow crops without an adequate estimate of the availability of groundwater resource. Failure of monsoons at critical crop stages induces farmers to supplement water from borewells. When borewells go dry, farmers in their frantic efforts to save the standing crop resort to drilling deeper or drilling another well. Often, they raise money from private moneylenders for the additional drilling. Failure to access water and consequent loss of crops drives them into a vicious debt cycle. Between the years 1995-2004, 156,562 farmers committed suicide across several states in India (Mishra, 2007). The number of deaths attests to the gravity of the problem. Several state governments were forced to offer emergency relief measures to stem the suicides.

Environmental Degradation: Environmental concerns about depleting groundwater resources focus on pollution and quality degradation of the resource. However, a range of environmental benefits accrue from stable groundwater levels. Given the increasingly variable monsoon rainfall, with the growing majority of precipitation occurring in short spells, groundwater plays a critical buffering role in sustaining springs, inland wetlands, and base flows in rivers during the dry season (World Bank, 2009). These naturally occurring sources play a crucial role in sustainability of inland aquatic systems, vegetation species that are important sources of food, fuel, and timber for dependent communities, and animal species. Groundwater is integrally linked

to hydrological, ecological, and human ecosystems (World Bank, 2009).

Overexploitation and quality degradation of the groundwater resource could undermine these.

Fiscal Problems: It is often argued that small and marginal farmers, who constitute over four fifths of all farmers in India, need state support to undertake agricultural operations. As noted earlier, minimum support prices (MSP) and free or subsidized electricity tariffs are two predominant strategies governments use to aid farmers. States that provide free or subsidized electricity to farmers are characterized by indiscriminate use of groundwater, a steep fall in the groundwater table, and aquifers reaching unsustainable limits. The MSPs and subsidized electricity may have provided short-term relief to the farmers while undermining their future. But depleting water levels and lack of access to water at critical crop stages causes despair and forces these farmers to resort to extreme measures (such as suicide). Mounting subsidies have put an unsustainable burden on state budgets and have contributed to the bankruptcy of state electricity boards (World Bank, 2009). Subsidies have further undermined farmers' interests and have contributed as well to the growing agrarian crisis.

Unstable Availability of Groundwater: Groundwater provides an assured source of water supply. This helps stabilize water flows during peak and dry seasons. As most groundwater sources react slowly to changes in rainfall, they buffer farmers from the vagaries of the monsoon. In rain-deficit years, farmers and water supply utilities can resort to groundwater use to offset shortages in surface water supplies. Climate change scenarios forecast that the variability in rainfall in India could increase, leading to bursts of rainfall in short durations followed by long dry spells (World Bank, 2009; MoEF,

2004). Also, the drier parts of the country may witness a decrease in rainfall. This increases the dependence on groundwater to stabilize water supplies. However, the percentage of overexploited aquifers is increasing at a rapid pace. At the same time, in hard rock layers of peninsular India, the recharge rates are low and only a small percentage of the rainfall recharges the aquifers. The variability in rainfall can lead to more runoff and low recharge. This may significantly impact availability of groundwater (World Bank, 2009). Thus, climate change may further exacerbate the negative socio-economic consequences of groundwater overexploitation.

Implications of Climate Change for Indian Agriculture and Allied Sectors

The Government of India prepared *India's Initial National Communication* (MoEF, 2004) towards its commitment to the United Nations Framework Communication on Climate Change (UNFCCC). The table below summarizes projections of climate variables and impacts for the 2050s:

Phenomenon and direction of trend in weather and climate events	Possible impacts on agriculture and related sectors
An all-round increase in temperatures and a general increase in monsoon precipitation in the monsoon season.	<ul style="list-style-type: none"> – Acceleration of the hydrologic cycle, altering rainfall magnitude and timing of run-off. – Increases in incidence of extreme weather events. – Increases in temperatures leading to rise in sea levels, resulting in land loss and population displacement, increased flooding of low-lying coastal areas, loss of yield and employment resulting from inundation and salinization. – Damage to natural ecosystems, such as wetlands, mangroves and coral reefs, grasslands and mountain ecosystems, undermining biodiversity and adversely affecting local communities dependent on the ecosystems. – Increases in vector and water-borne diseases, negatively

Phenomenon and direction of trend in weather and climate events	Possible impacts on agriculture and related sectors
	affecting human health.
A large spatial variation in the relative increase in monsoon precipitation.	<ul style="list-style-type: none"> – Variability may affect rain-fed crops, such as pulses, significantly. – Impact on short season crops such as vegetables because of variations in rainfall during critical crop-growth stages. – Damage to fruit because of weather changes during critical periods.
An overall decrease in the number of rainy days over a major part of the country.	<ul style="list-style-type: none"> – Threats to agriculture and food security, since agriculture is monsoon dependent and rain-fed agriculture dominates in many states. – Inadequate amounts of water at critical crop growth stage stages. – Increase in frequency and intensity of droughts and floods can affect production on small and marginal farms. – Water stress and reduction in the availability of fresh water.
An overall increase in the rainy day intensity by 1-4 mm/day.	<ul style="list-style-type: none"> – Increase in rainfall intensity results in higher runoff and affects groundwater quality in alluvial aquifers. – Negative impact of changes in weather at critical growth points of short season crops.
An increase in the temperature (maximum and minimum) of the order of 2-4°C over the southern region that may exceed 4°C over the northern region	<ul style="list-style-type: none"> – Increase energy requirements and adversely impact climate-sensitive industry and infrastructure. – Rising sea level rise and melting of glaciers adversely affects the water balance in different parts of India and quality of groundwater along the coastal plains. – Increased demand for groundwater leads to further exploitation of the fast depleting resource. – Changes in pest scenario, soil moisture storage, irrigation water availability, mineralization of nutrients, and socio-economic changes impact negatively on agricultural production.

The adverse impacts of climate change could cause environmental degradation, further deteriorate agriculture productivity and livelihoods, and threaten food security.

This coupled with poor infrastructural facilities, weak institutional mechanisms and

inadequate financial resources make the country particularly vulnerable (MoEF, 2004). India is seriously concerned with the possible impacts of climate change. Further, achievement of vital national development goals related to other systems, such as habitats, health, energy demand, and infrastructure investments, would be adversely affected.

Building Farmers' Adaptive Capacity

Adaptation should reduce vulnerability to climate change. “Adaptation is adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderate harm or exploit beneficial opportunities” (Glantz, Gomez, & Ramasamy, 2009, p. 35). A host of agro-climatic factors – for example, the nature of soil, biomass, wind velocity and direction, water resources, temperature, and altitude – influence the impact of climate change, thus making the effects of climate change local and location specific. Historically, farmers have developed mostly reactive mechanisms to cope with climatic variability. Rarely have these coping mechanisms, which have been reactions to the immediate situation rather than long-term solutions, been approached proactively (FAO, 2008). Since the impacts of climate change will vary with time, it is also critical to build farmer capacity to prepare for climatic variability, which “refers to variations in the mean state and other statistics of the climate on all temporal and spatial scales beyond that of individual weather events” (FAO, 2008, p. 18).

FAO (2008) states that adaptation, which involves either moderating the harm or exploiting the beneficial opportunities of climate change, should be the immediate concern and that the response needs to be local and location specific. Effective adaptation

strategies should tap the body of knowledge within local communities on coping with climatic variability and extreme weather events. Indigenous knowledge and local coping mechanisms are a key baseline and starting point for adaptation planning. Adaptation planning should involve both short-term preparedness and long-term adaptation. The unpredictability of weather patterns and increasing frequency of natural disasters calls for preparedness amongst farmers and communities. Preparedness equips farmers and communities to cope with unpredictable events and mitigates the negative outcomes of climatic variability. It involves collective identification, assessment, and prioritization of risks. This is followed by rational application of resources to monitor, control, and minimize the impact of unforeseen events. Over time, preparedness helps farmers and communities adapt to climatic changes.

Thus, it is imperative to facilitate the convergence of local farmers' knowledge with more scientific knowledge (FAO, 2008; IFPRI, 2009). To enable this, countries must develop meaningful and reliable databases and climate system models using locally collected data on climate, agriculture, natural resources, and markets. The Government of India's National Action Plan on Climate Change (NAPCC) launched in 2008 also calls for convergence and integration of traditional knowledge and practice systems, information technology, geospatial technologies and biotechnology to improve farmers' preparedness to climate change (GoI, 2008). Such models can provide more consistent data to estimate future local conditions with an increasing degree of accuracy. While this helps build information sources or fill gaps in data on climatic variability at regional and national level, it could also be used to provide farmers and local communities with reliable information and practical concepts that they can use in their adaptation and

planning (FAO, 2008). Thus, a collaborative effort by the scientific community, farmer facilitators, farmers and local communities to build information and knowledge bases could benefit all.

Building Farmer Preparedness for Climate Change in Andhra Pradesh, India

FAO and its partner Bharathi Integrated Rural Development Society have made sustained efforts since 2004 to build farmer preparedness in seven drought-prone districts of the state of Andhra Pradesh in South India. As noted earlier in this chapter, nine partner nongovernmental organizations⁷ implemented the previous groundwater management project⁸ between 2004 and 2010, and then evolved as the implementing agencies for the new climate change project⁹ in which this research took place.

The previous project addressed the issue of groundwater depletion using the demand-side approach to management of groundwater. The project worked to enhance the ability of farmers, water user groups, and communities to manage their groundwater resources in a judicious and sustainable manner. Towards this end, the project used an integrated multi-disciplinary approach, addressing hydrological, agro-technical, institutional, and social aspects of village life and livelihoods. The project facilitated the formation of Groundwater Monitoring Committees—638 farmer committees at the habitation level that monitored groundwater resources in the particular habitation. These committees were then federated into 63 Hydrological Unit Networks at the hydrological unit level. The previous project was successful in building the capacities of these farmer institutions to manage groundwater resources based on locally generated data that has

⁷ Names of the nine PNGOs and their field unit locations are enclosed as Appendix E.

⁸ Andhra Pradesh Farmer Managed Groundwater Systems (APFAMGS) project

⁹ Strategic Pilot on Adaptation to Climate Change (SPACC) project

scientific validity, with the assistance of the local NGOs. Also, these farmer institutions took lead in dissemination of data, identifying and resolving issues related to water and agriculture, and acted as a platform for collective management of groundwater resources.

Farmer participants across several habitations of the previous project adopted a wide range of soil and water conservation practices to improve groundwater availability in their respective hydrological units and across the project area. These strategies gave them the same or greater returns with reduced draw down of sub-surface water. Farmers in 638 habitations demonstrated that groundwater use could be reduced appreciably through relatively simple practices at the farm level and by adopting new water saving techniques. Also, this substantially reduced new investments in drilling borewells and focused on efficient utilization of existing groundwater resources (World Bank, 2009; FAO, 2008; The Economist, 2010). Farmer institutions, such as Hydrological Unit Networks, emerged as the main vehicle to federate the farmers.

There has been considerable variability in the monsoon in recent years in Andhra Pradesh. This affected agriculture operations in the previous project area. FAO and the implementing partners of that project explored additional funding opportunities to continue to work with farmers to build their adaptive capacity to climate variability and change. They were successful in mobilizing additional funds, although there was a time lag of two years¹⁰ between the closure of the previous groundwater management project and the start of the new climate change adaptation project. This time lag affected field operations of the partner NGOs. Critical support needed to strengthen farmer institutions—the groundwater committees and hydrological unit networks—could not be

¹⁰ Field operations in APFAMGS project came to a close by mid-2009 and field operations in SPACC project started in mid-2011.

provided. Consequently, there were gaps in data collection and dissemination. The inability of these farmer institutions to ensure farmer compliance to crop-water plans led to a fall in groundwater levels and farmers resorted to drilling borewells to further depths.

The goal of the new SPACC project was to strengthen the knowledge and capacities of communities to respond to climate variability and change impacts in pilot hydrological units in seven drought-prone districts of Andhra Pradesh. In consultation with the farmer institutions, the project reconfigured them as Climate Change Adaptation Committees (CCACs). The membership of the farmer institutions was expanded to other vulnerable groups and their terms of reference were extended. At the village level, farmer committees were reconfigured to form CCACs. The village-level CCACs were federated at the hydrological unit level into HU-level CCACs.

Each implementing partner of the SPACC project set up a field unit to implement the project activities. FFs, in each field unit, interacted with farmers on a daily basis to establish and sustain critical relationships with individual farmers and local communities. They participated in monthly meetings of village-level CCACs and quarterly meetings of HU-CCACs, monitored their functioning and provided assistance as needed. Further, they organized trainings and workshops to build farmers' knowledge and skills. Between September 2011 and October 2012, these FFs implemented a series of capacity building activities to build the institutional strength of CCACs, increase their awareness of the concepts of climate change, variability, the need to adapt to climate variability. As noted earlier, the CCAC capacity building helped clarify roles and institute a planning process that resulted in CCAC-developed action plans for moving the project ahead in each field unit.

CHAPTER 2

LITERATURE REVIEW

Adaptation planning for addressing the impacts of climate change at the local level calls for participatory knowledge generation, collaborative action and information dissemination strategies that involve farmers and local communities in dialogue with field facilitators and the scientific community. These strategies are highly dependent on the development of communities of practice, both amongst field facilitators and farmers. The underlying assumption is, as Maguire (1987) phrases it, “we both (in this case *all*) know some things; neither of us knows everything. Working together, we will know more, and we will both learn more about how to know” (cited in Selener, 1997, p. 36).

In this chapter, I explore the literature about the value and process of increasing ownership of project interventions amongst farmers, wherein the “objects” of research (farmers) become the “subjects” and partners in the learning process, contributing actively to program design and implementation, and eventually playing a role in policy making (Selener, 1997).

In doing so, I examine several theories and related research studies that are relevant to the question of increasing farmer participation and ownership in efforts to improve their adaptive capacity and preparedness in the face of adverse impacts of climate change. I define farmer ownership as farmers (a) being sufficiently motivated to participate in training to learn new skills and knowledge and (b) practicing the acquired skills and knowledge, as they perceive them to be beneficial in the short term as well as in the long term. On the other hand, participation is more than just attending. It entails

actively engaging in discussions to share their experiences, views and ideas. The various theories on participation include:

1. Participation Theory
2. Negotiation Theory
3. Collaboration Theory
4. Systems Theory

Participation Theory

Participatory theory views “cognitive change as the prime prerequisite for behavioral change and conflict resolution” (Leeuwis, 2000, p. 940). The assumption is that “participation is intrinsically a good thing, especially for the participants” (Cleaver, 2001, p. 36). Participation entails active contribution of local knowledge and resources by the local people for self-reliant development. For example, while agricultural scientists and field facilitators may have generalized knowledge of good practices and techniques, their knowledge of what works well in the local context is incomplete. To understand local realities and what works in the local situation, field facilitators need to be open to learning the specifics of the local context from farmers and community members who may be less educated and who articulate their knowledge in non-academic ways. Participatory processes stress the importance of joint situation and problem analysis and collaborative learning. Empowerment of the local people and self-reliant development calls for reversals of conventional power from outsiders as “uppers” to local people as “lowers” (Chambers, 1997).

Leeuwis (2000) points out that participatory discourse uses three types of arguments to advocate for a participatory approach in any intervention process:

- *Instrumental argument*: Use of participatory methods facilitates generation of authentic information from the local people.
- *Ideological/ normative argument*: It is morally imperative to enable the local people to participate in efforts that aim to change or improve their own situation.
- *Political argument*: Effective participation in the development process leads to empowerment of the local people and transforms the conditions affecting their growth.

All arguments in support of participation rest on similar conceptual ideas that change comes about as a result of social learning (Leeuwis, 2000). Several of these arguments are discussed below:

- *Primacy of joint situation and problem analysis*: It is presumed that lack of collective knowledge and skills are key obstacles to comprehensive change and development. Therefore, joint exploration of the problem or issue by the local people and interventionists leads to “a better or a more widely-shared understanding of the situation” (Leeuwis, 2000, p. 936).
- *Emphasis on communication and communicative action*: A variety of tools and exercises are used to facilitate participation of the local people and enhance communication between them and the interventionists. This “reflects the idea that social learning can benefit a great deal from the effective and open communication of stakeholder ideas and perspectives. The role of the facilitator is to support this type of communication” (p. 937).

- *Selection of participants*: Participatory processes call for participation of all relevant stakeholders, which leads to a shared understanding. It is assumed that this inclusive approach in conjunction with social learning can overcome conflicts of interest between different parties.

It is assumed that participation in the participatory planning processes creates greater awareness amongst community stakeholders of their own resources, and thereby facilitates radical transformation of social reality and improvement in the lives of the people involved. Therefore, program planners and implementers should focus on getting the techniques right for successful implementation. By doing so, “participation has become an act of faith in development, something we believe in and rarely question.” (Cleaver, 2001, p. 36).

Typologies of Participation

In the history of development starting from the 1940s, participation has come to be influenced by ideological, political, social, and methodological aspects, giving rise to various typologies (Reed, 2008). These typologies do not provide competing viewpoints; rather, they help us understand the type of participation used in a particular context or identify the participatory approach or methods relevant to the given situation (Reed, 2008). A review of the participation typologies shows that they are implicitly normative, suggesting progression towards increased participation of the people leading to their empowerment and taking charge of the process (Pretty, 1995; Selener, 1997; Cornwall, 2008). Reed (2008) categorized the participation typologies into four broad classes based on their focus. They are:

- Degrees of participation on a continuum;
- Nature of participation according to the direction of communication flows;
- Theoretical basis, essentially distinguishing between normative and/or pragmatic participation; and
- Objectives for which participation is used.

These typologies can help all levels of program stakeholders—program managers, project staff, and program participants—understand the type of participation in use in a particular context or identify the participatory approach or methods relevant to a given situation.

Conceptual Shortcomings of the Participatory Models

Participatory concepts and processes have contributed immensely to and deeply impacted community development efforts over the past six to seven decades. There is widespread adoption of the language of participation across a spectrum of institutions, from radical NGOs to local government bodies to the World Bank (Cornwall, 2008). However, the stress on planning and consensus building at the local level is based on assumptions that communities at the local level are homogenous units – which they are not in reality. Leeuwis (2000) points out that, “advocates of participatory methodologies tend to disregard a range of other strategies or policy instruments which may help to change practices, interests and eventually, perceptions in the context of conflict resolution” (p. 940). His argument is that participatory practitioners fail to see that bringing all relevant stakeholders on a common platform for social action doesn’t automatically translate into these different stakeholders setting aside their conflicting

interests – personal and/or institutional – during the planning and subsequent implementation.

In participatory development discourse, “people’s knowledge or local knowledge is seen as a fixed commodity that people intrinsically have and own” (Kothari, 2001, p. 141). She argues, rather, that:

knowledge is culturally, socially and politically produced and is continuously reformulated as a powerful normative construct. Knowledge is thus an accumulation of social norms, rituals and practices that, far from being constructed in isolation from power relations, is embedded in them (or against them) (Kothari, 2001, p. 141).

Mosse (2001) points out that, local relations of power, authority and gender strongly shape production of knowledge at the local level. For example, is the knowledge being produced by a farmer with large land holdings, who has access to irrigation, or is knowledge being produced by the small and marginal farmer whose borewells are drying up, or is it by the agriculture laborer, or is it by the woman farmer who deals with day-to-day agriculture operations, or is it by the male farmer who is primarily concerned with purchases and marketing of produce?

Most participatory exercises are usually public events conducted in the village commons. The public nature of the event makes it political, and the open-ended nature of the participatory planning process makes it susceptible to dominance by local authority or outsiders and muting of the oppressed voices (Mosse, 2001). For example, patriarchy-based socialization can restrict women’s presence and participation in decision-making bodies. This can lead to prior restraint/ exclusion of their issues and concerns from the

planning process (Lambrou & Piana, 2006). Hailey (2001) calls attention to the collective nature and general acceptance of social and power differentials in developing societies. Citing the work of Hofstede and Trompenaars, he suggests that participation is construed differently in societies characterized by collectivist tendencies and high power distance when compared to western cultures characterized by individualism and low power distance. Thus, “the process of participation is not universal and is contingent on different cultural norms and assumptions” (Hailey, 2001, p. 97).

In addition, the expectation that the planning process should produce a concrete plan of action leads to suppressing divergent voices in favor of artificial/ symbolic consensus (Mosse, 2001), especially where all participating stakeholders are not on an equal footing. Additionally, despite the rhetoric of participation, planning negotiations between the project implementers and local people are not between equals. Mosse (2001) indicates that project facilitators are not passive participants. They shape and direct the research tools, discussion topics, recording of information, and consolidating the data. He draws attention to the fact that Participatory Rural Appraisals (PRAs) rarely reveal any alternatives to the official view of the problem. Thus, there is a distinct risk that the local knowledge generated in PRAs can be an “expression of outsider agendas” (p. 19). Accordingly, agencies can use PRAs or people’s knowledge “to advance and legitimize the project's own development agenda” (p. 22).

Mosse (2001) also points out that often program decisions are made “with little reference to locally produced knowledge” (p. 23). He states that PRA charts and diagrams often end up as attractive wall decorations symbolizing “participatory intentions and legitimizing decisions already made” (p. 23). He argues that it is simplistic to assume

that improved access to local information leads to participatory decision making. Project priorities are often influenced by the wider institutional and instrumental setting in which they operate and the need to maintain relationships with local government, senior management, research institutions or donor advisers. Project managers may have to compromise to suit the distinct development agendas of these key players. Also, project plans and activities are “shaped by the project’s engagement in wider coalitions contending for influence within national or international policy arenas” (Mosse, 2001, p. 24). Further, project decisions and implementation are constrained by organizational systems and procedures, such as budgeting timeframes, procedures for approval, sanctioning, fund disbursement, and procurement. Given these operational dynamics and constraints, field facilitators develop their own interpretations of farmers’ needs and project goals and design intervention strategies that balance the needs of the project management with local needs (Mosse, 2001). However, when fieldworkers do not engage in collective planning, reflection, and documentation of their interactions with farmers, it could affect continuity between interactions, and undermine farmer ownership of the process as well as the sustainability of the intervention.

In discussing issues in operation and representation in projects, Mosse (2001) points out that as the project gets underway and the pressure of timelines mount, “project staff take on more of the organization of activities and villagers retreat from temporary planning/ decision-making to the more familiar role of passive beneficiary, strategizing to maximize short-term benefits from wages and subsidies” (Mosse, 2001, p. 26). Thus, “social hierarchies challenged in early planning become reasserted at implementation” (Mosse, 2001, p. 26). This reaffirms the need for field facilitators to practice planning-

reflecting-documenting-planning and share and re-invent these same skills and practices together with farmers to sustain farmer participation and further encourage farmer ownership of the process.

Constitutive values and common purpose are achieved through inclusion, dialogue and deliberation. In the context of climate change, the constitutive value (Rallis, Shibles, & Swanson, 2002) that brings farmers, field facilitators, and agricultural scientists together is farmer and community preparedness to cope with impacts of climate change. Equal and expanding opportunities for participation by relevant stakeholder groups are essential to facilitate effective dialogue, which leads to discovering and articulation of real issues (Rallis, Shibles, & Swanson, 2002). For farmers, field facilitators, and agricultural scientists to acknowledge each other as peers, they need to address the mental models and develop respect and acknowledge each other's knowledge systems. This requires that agricultural scientists and field facilitators, in particular, invest time and energy to immerse themselves in local contexts to understand, appreciate, and respect local values, norms, and culture which shape identities and practices (Rhoads, Wilson, Urban, & Herricks, 1999).

In reviewing a broad range of research on participation in international development, I found that the seminal work of Rhoads et al (1999) provided the most comprehensive analysis of participation. Rhoads et al. identify factors that hinder participatory decision making processes and stress the importance of developing relations based on understanding, mutual respect and trust between scientists and non-scientists in community-based watershed management. I found these recommendations especially relevant and applicable to interactions among farmers, field facilitators and scientists on

farmer preparedness to adapt to climate change as crop-water management, insect and pest management and land management issues in agriculture production take a watershed approach for sustainable management resources or resolution of the problems. I argue that it is imperative that scientists invest the time and energy to “understand, appreciate, respect, and immerse themselves within local social contexts” (Rhoads, Wilson, Urban, & Herricks, 1999, p. 298), in order to help them understand “place-based social worlds of local communities” (p. 306). This will enable them to “effectively situate their experience, information, and opinions” (p. 306) within the local social contexts. Also, “genuine social interaction between scientists and nonscientists requires a considerable investment of time and energy on the part of the scientist to develop personal relationships with nonscientists based on trust and mutual exchange of information” (p. 298).

Rhoads et al. (1999) cite research on international development as evidence that:

- “different valuations of the biophysical environment by local people and technical experts” are the cause of misunderstandings and conflicts between the two groups;
- “differences in the empowerment of various stakeholders influence social negotiations”; and
- “conceptions of nature, environmental quality, and sustainability are value-laden social constructions that cannot be derived from or made absolute by scientific inquiry” (Rhoads, Wilson, Urban, & Herricks, 1999, p. 298).

Rhoads, et al. claim that “truly participatory approaches to environmental management must fully respect the knowledge, experiences, values, interests, and

resources of various participants” (p. 298). This raises a key question for non-formal educators and practitioners of participatory methodologies: How do we understand and appreciate local knowledge, experiences, values, interests, and resources? I argue that investing time and energy to immerse field facilitators and project staff in the local contexts should also include practicing planning-observing-reflecting-documenting processes on the part of FFs and agricultural scientists when engaging farmer participants and local communities.

Negotiation Theory

Negotiation theory is based on the assumption that stakeholders act strategically to further their self-interests and that conflicts, social struggles, and strategic action are all intrinsic to sustainable rural development processes. Practitioners should anticipate and make use of the dynamics of conflict to forge agreements. Social learning and cooperation amongst stakeholders depend on pre-conditions and institutions which are strategically negotiated (Leeuwis, 2000).

Leeuwis (2000) points out that the give-and-take and behind-the-scenes negotiations and maneuvers in the decision making process are not included in the mainstream discourse on participation. He argues that given the multiplicity of interests and that the stakeholders tend to act strategically to protect their interests, community development approaches need to recognize and articulate strategies to engage conflicts, social struggle and strategic action in order to be effective. While acknowledging the usefulness of the social learning process in participatory discourse, he believes that the participatory discourse should draw upon theories of negotiation and conflict

management. Building on elements of negotiation literature, van Meegeren and Leeuwis (1999) propose a number of tasks that can help facilitate integrative negotiations. These include: preparation, agreeing upon a process design and process protocol, joint fact-finding, forging agreement, communication of representatives with constituencies, monitoring implementation. Additionally, they have proposed a number of simple guidelines to facilitate negotiations to support the various tasks. However, van Meegeren and Leeuwis (1999) suggest that these guidelines and tasks should be adapted to suit different negotiation cultures. The approach lays down three fundamental conditions for negotiations. Stakeholders must: (a) have divergent interests, (b) feel mutually interdependent and (c) communicate with each other (Leeuwis, 2000).

The negotiation approach calls for a more proactive – and exposed – role for the facilitator. According to this approach, in a context of negotiation, facilitation of communication and social learning are enfolded into the wider negotiation tasks and tools. So, the “facilitator needs to have an active strategy, resources, and a power-base in order to forge sustainable agreements” (Leeuwis, 2000, p. 950). For this, the facilitator should have “a certain amount of status, credibility, charisma, influence and trustworthiness” (p. 950). Therefore, it becomes imperative to select a facilitator who possesses necessary insights and capabilities to handle social interactions and shape negotiations. However, the emphasis on *agreement* in the list of tasks, and on the qualities and resources of a facilitator to forge sustainable agreements could be interpreted as coercive. While the facilitator is viewed as a participant and learner in participatory approaches, in the negotiation approach the facilitator is perceived as having a higher status than the participants. There is a high probability that a charismatic and

dominant field facilitator could be from the dominant group—in the context of farmer and community participation, a large landholder or a rich farmer. Given this, the chances of the field facilitator being partisan or colluding with the dominant group(s) to protect their own interests cannot be ruled out.

Collaboration Theory

Selin and Chavez (1995) define collaboration as “a joint decision-making approach to problem resolution where power is shared, and stakeholders take collective responsibility for their actions and subsequent outcomes from those actions” (p. 190). They propose a process-oriented model of collaboration which is contextual to “the unique demands of the situation rather than using the same approach for all issues (p. 190). According to Selin and Chavez, collaboration emerges out of an environmental context, which they label as *antecedents*, and then proceeds sequentially through problem-setting, direction-setting, and structuring phases. Outcomes and feedback complete the cycle.

Building on Selin and Chavez’s collaboration model, Walker and Daniel (2001) call for greater participation of the people and urge increased collaboration between scientists and local people, especially in natural resource management. They point out that, in the past, public participation activities in projects have attempted to engage the public, while giving precedence to scientific, technical, and administrative expertise. Consequently, “they have not systematically brought scientists and citizens together in an interactive, mutual learning environment.” (Walker & Daniels, 2001, p. 257). They

indicate that the focus of traditional public participation methods has been “to educate the public” (p. 259).

Walker and Daniel (2001) draw attention to the fact that the local people want the scientists and project managers “to respect and be responsive” to indigenous knowledge and local expertise (p. 260). To foster respect and facilitate meaningful dialogue, they call upon the scientists to assess and adapt to local communication needs, respect cultural preferences in learning and knowing, use language that is understandable to all, be open to listening, be patient, and monitor their non-verbal and verbal behavior in their interactions with local communities. Similarly, they believe that the local people should be open to learning, and to understanding the complexity and systemic nature of environmental issues (Walker & Daniels, 2001). They suggest various methods—such as study groups, field trips, joint forums, dialogues, joint assessment and planning—to promote greater collaboration between scientists and local people. However, Selin and Chavez (1995) point out that significant power differences between collaborating parties or misgivings about participation among some groups can undermine collaboration.

The collaboration model focuses on building partnership or collaboration utilizing key issues or problems occurring in a given community to rally its members. Stakeholders are interested in collaborating to address the issue affecting them and will continue to do so as long as they perceive the issue as important and the benefits from participation outweigh the costs. However, within a community there could be members who do not perceive the usefulness of collaboration and may perceive the effort to build collaboration as threatening their interests. Often these members are more influential and powerful members of the community who are interested in maintaining the status quo.

The collaboration model assumes that stakeholders will identify or *name* the issue affecting them and will collaboratively work towards addressing it. Thus, sustained engagement and continuity in interactions with local communities by FFs will aid significantly in developing locally appropriate implementation strategies.

Systems Theory

Systems theory calls for an understanding of the whole picture. Senge (1990) points out that often we tend to focus on the parts and fail to see the organization as a dynamic process that involves interrelationships between the different parts. Senge's concepts of systems thinking, mental models, personal mastery, shared vision, and team learning may give important insights on to the interactions between farmers and field facilitators' for creation of sustainable learning communities.

According to Senge, even though all people have the capacity to learn, often the structures in which they have to operate are not conducive for reflection and engagement. According to him, a learning organization has to look beyond “survival learning”—often termed as “adaptive learning”. Adaptive learning and generative learning—“learning that enhances our capacity to create”—are required for an organization to continually expand “its capacity to create its future” (Senge, 1990, p. 14).

According to Senge, a learning organization must master certain basic disciplines and see the convergence between them. *Systems thinking* integrates all four disciplines, fusing them into a coherent body of methods, tools, and principles, all oriented to looking at the interrelatedness of forces, and seeing them as part of a common process. The four disciplines are:

- *Personal mastery* is the discipline of continually clarifying and deepening our personal vision to create the results most desired.
- *Mental models* are deeply ingrained generalizations and visions influencing how we see and understand the world and how we take action.
- *Building shared vision* builds a sense of commitment in a group.
- *Team learning* is the transforming of conversational and collective thinking skills, so that groups can reliably develop intelligence and ability greater than the sum of individual members' talents.

The use of systems' thinking concepts enables farmers and field facilitators to prioritize farmers' problems and strategize response to a particular a problem, i.e. whether to address the issue at the event, pattern, or structural level. Managing mental models is critical to improve their interactions with each other and to facilitate a collaborative learning environment. Addressing this is important for building a shared vision and facilitating team learning. This calls for scientists (in particular) and farmer trainers to invest time and energy to immerse themselves in local contexts to understand, appreciate, and respect local values, norms, and culture which shape farmer identities and practices. I argue that investing time and energy in building a shared vision and facilitating team learning is central to practicing planning-observing-reflecting-documenting on the part of FFs and agricultural scientists when engaging with farmers and local communities.

Summary of Key Theories of Participation

Participatory approaches call for active participation of local stakeholders in the development processes. Advocates of participatory approaches stress the importance of joint situation and problem analysis and collaborative learning. The guiding principle is that participation is intrinsically a good thing, especially for the local participants. Facilitating effective local participation calls for an understanding of local realities. To understand the local realities and what works in the local situation, field facilitators need to be open to learning the specifics of the local context from farmers and community members who may be less educated and who articulate their knowledge in non-academic ways. This calls for developing relations based on understanding, mutual respect and trust between project staff and farmers. Understanding and appreciating local knowledge, experiences, values, interests, and resources requires field facilitators and project staff to invest time and energy. The communities of practice theory, however, provides the framework and tools for FFs to develop a deeper understanding of their interactions with farmers, and identify effective ways of building farmers' capacities, through improving and strengthening of FFs' collective practices. The collective practices—planning-observing-reflecting-documenting—facilitate “adaptive learning” as participants engage in joint activities to share resources, experiences, and learning.

Conceptual Framework: Communities of Practice Theory

Another theory for guiding greater collaboration between field facilitators and farmers is the concept of “communities of practice”. In a rural setting, farmers' interactions are characterized by give-and-take, leading to sharing of tools and resources,

contributing to the local pool of knowledge, and forming a community of practice.

Similarly, field facilitators form a community of practice—sharing resources, experiences, learning, and strategies.

People with a shared interest for collective learning and improving their practice cultivate community of practice (Wenger E. , 2006). Wenger (2006) states that a community of practice should have three characteristics:

1. ***The domain:*** A shared domain of interest, commitment to the domain, and a shared competence distinguishes members from other people.
2. ***The community:*** “In pursuing their interest in their domain, members engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other” (p. 2).
3. ***The practice:*** Members are active practitioners and, in the pursuit of that practice, “they develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems—in short, a shared practice. This takes time and sustained interaction” (p. 2). However, the development of a shared practice may not be conscious effort.

Combining and developing these three elements in parallel leads to a community of practice. However, communities of practice come in a variety of forms – small, large, local, global, face-to-face, online, intra or inter-organizational, formal and informal. Communities develop their practice through a variety of activities, including common problem solving, responding to requests for information, drawing upon each other’s experience, sharing and reusing assets, coordinating and synergizing for efficiency or economy, discussing developments, documenting learning, participating in cross-visits,

and mapping knowledge and identifying gaps. Thus, communities of practice develop over time.

In this research, I used an action research approach: (1) my co-researcher and I helped field facilitators launch a new “action” or intervention, which was the addition of new collective practices for planning, observing, reflecting and documenting, and (2) we collected data on (a) how this intervention influenced the FFs’ practice as a community, and (b) how FFs’ and farmers’ perceived these new practices influenced the way they worked and communicated together. For both the action/intervention and the assessment of how it influenced FFs and farmers, the concept of “communities of practice” is deemed relevant.

Various initiatives in several countries across Asia have successfully experimented with the strategies of engaging farmers in a geographic area to work collectively—engage in ongoing dialogue on challenges, identifying feasible solutions, and developing concerted action to address the challenge—and sustain their practices over a period of time to overcome farmers’ challenges in pest management and crop-water management. The Farmer Field School and Farmer Water School concepts, that I was involved in, were conceived from the successes of these farmer initiatives. Though these initiatives did not use the term Communities of Practice, they were using elements of Communities of Practice to build farmers’ collectives (small and marginal farmers) and strengthen their ability to cope with challenges to their primary livelihood—farming.

Framework for the “Action” or Intervention

Wenger proposes seven principles for successfully cultivating communities of practice (Wenger, McDermott, & Snyder, 2002). I used these principles to assist the FFs at each of the two field units to cultivate their communities of practice.

1. **Design for evolution:** Cultivating a community of practice requires starting with participants where they are, rather than where you would like them to be. This means encouraging participants to continue what they are doing and adding value to ongoing practices or works. Aside from this, participation is voluntary. Members can only be encouraged or persuaded to join the community of practice. Some may demonstrate more interest than others. Some members may leave and new members may join.
2. **Create a rhythm for the community:** A series of actions that community of practitioners’ engages in helps create a collective rhythm. The demands on members should neither be too hard nor too light as the extremes can lead to members’ either abandoning or losing interest in the practice.
3. **Combine familiarity and excitement:** Build on what people know and are comfortable with as long as it is relevant and then add new things that challenge them to improve their practice. Also, create space for participants to discuss challenges, so that the challenges become familiar. These processes energize participants.
4. **Open a dialogue between inside and outside perspectives:** In any community of practice there are insiders and outsiders. Insiders are those who share a domain of interest, engage in joint activities, and develop a shared repertoire of skills and

resources. Outsiders include both those providing inputs and assistance to the community in its work, as well as those receiving support and assistance from it. A successful community interacts with and engages those on the outside to improve their practice.

5. **Invite different levels of participation:** Participants' level of engagement can vary. Their contribution could be based on their expertise and abilities. Also, some may linger on the periphery before committing themselves fully.
6. **Develop both public and private community spaces:** Interactions between participants can be both one-on-one and collective. This provides scope for improving their individual capacities as well their collective community of practice. Also, participants could be working individually or collectively in pursuit of the practice.
7. **Focus on value:** Encourage participants to reflect and identify the value added that their participation brings to the community and to them as individuals. This involves learning to trust each other, and recognizing that each participant adds value to the community and its collective practice.

In the next section, I discuss the framework that I used to assess the impact of FFs' communities of practice.

Framework for Assessing the Influence of the Intervention on FFs' Practice and FFs'/Farmers' Work and Communications

To assess the impact of the action research on FFs' communities of practice, I adapted the framework that Wenger, Trayner, and Laat (2011) developed to assess value

creation in communities and networks. The framework uses five cycles to assess value creation. These include:

1. Immediate value,
2. Potential value,
3. Applied value,
4. Realized value, and
5. Reframing value.

The research with the FFs was conducted for a one-year period. The data is inadequate to analyze the last cycle—reframing value, which would require longitudinal data. Therefore, to analyze data of the current study, I used the first four—immediate value, potential value, applied value, and realized value. This framework helped me review multiple sets of data that the study generated and integrate the analysis to portray a holistic picture of the value that the FFs’ community of practice created for them and for the farmer participants. The different levels of analysis that I propose in the framework are:

1. **Immediate value:** Did the FFs report valuing interactions and activities in the community of practice? Did farmers report valuing their participation in CCAC capacity building activities?
 - How often did FFs report that they met?
 - Did FFs report that they discussed issues and identified strategies in implementing CCAC/farmer capacity building activities?
 - What immediate benefits did the FFs perceive from participating in the community of practice?

- What immediate benefits did the farmers report from participating in the CCAC capacity building activities?
2. **Potential value:** What potential value (i.e. knowledge, networking, resources, recognition, and understanding) did FFs report their participation created for them as individuals and collectively? What potential value did farmers report their participation created for them as individuals and collectively?
- As individuals
 - What new skills and knowledge, if any, did FFs report gaining?
 - What change in confidence, if any, did FFs report gaining?
 - What new skills and knowledge, if any, did farmers report gaining?
 - What change in confidence, if any, did farmers report gaining?
 - Resources gained
 - What new tools and methods, if any, did the FFs report they gained from participation?
 - What new tools and methods, if any, did the farmers report they gained from participation?
 - Cultivating a community of practice
 - How did FFs demonstrate their capacity to work as a team to use the collective practices (planning-observing-reflecting-documenting)?
 - What change in effectiveness and/or efficiency did the FFs report gaining through their collective learning and how was it demonstrated?

- Social capital (relationships and connections)
 - What changes did FFs report in their relationships with their colleagues?
 - What change in trust and openness, if any, did the FFs report amongst themselves from participation in the planning-observing-reflecting-documenting process (community of practice)?
 - What learning, if any, did the FFs report from interactions with their colleagues?
 - What changes in level of trust amongst the FFs did FFs report?
 - What learning, if any, did farmer participants report from their interactions with other farmers in CCAC capacity building activities?
 - What did farmer participants report on the associations they made from participating in CCAC capacity building activities?
 - Ability to respond to new on-the-job learning opportunities
 - How did FFs report that their participation transformed their abilities to learn?
 - How did FFs report recognizing and take action on opportunities for learning that they did not see before?
3. **Applied value:** What changes in FFs' practices were reported? What changes in farmers' practices were reported?

- What impact did FFs believe that participation in the community of practice have on their interactions with farmers in CCAC capacity building activities?
 - What did the FFs report about the use of the products (training designs, illustrations, reports, etc.) of their community of practice?
 - What did the FFs report about the application of the skills they gained?
 - What did the FFs report about use of support from other FFs in their community of practice to resolve issues of concern and how did they do this?
 - What did the farmer participants report about use of the learning they gained from participating in CCAC capacity building activities?
4. **Realized value:** How did FFs' participation in the Community of Practice impact their performance in the work they did under the project? How did farmers' participation in farmer trainings and meetings impact their performance and ownership?
- What aspects of FFs' performance did they report being impacted by their participation in the practice?
 - What did FFs report on effectiveness of a strategy that they collectively developed and used?
 - What aspects of farmer participants' performance did they report being impacted by their participation in the CCAC capacity building activities?

Based on the literature, which indicates there is a need for research on the impact of FFs' community of practice on ways in which FFs and farmers worked and

communicated with each other, I outline the design and methods of this study in the next chapter. I also include a description of how I set up the research, developed the “action” / intervention, selected the sample for data collection, collected and managed the data, and analyzed the data.

CHAPTER 3

RESEARCH DESIGN AND METHODS

The research addressed the question: *What happened to (a) farmers' ownership of groundwater management and weather monitoring, and (b) FFs' and farmers' communications and work together when project staff used the concept of communities of practice to initiate new project interventions?*

I developed the following sub-questions to guide the research.

- How did the action research interventions¹¹ influence the way field facilitators and farmers communicated and worked with each other, according to FFs and farmers?
- How did the action research interventions influence farmers' ownership of groundwater management and weather monitoring, according to FFs and farmers?
- What other factors, besides these project interventions, influenced FFs' and farmers' communications and work with each other, and influenced farmers' ownership of groundwater management and weather monitoring?

Research Design

I used an action research process to conduct the research. The research involved studying the effectiveness of FFs' collective practices—collective planning, peer-to-peer observation and feedback on facilitation, reflecting on farmer trainings, and documenting

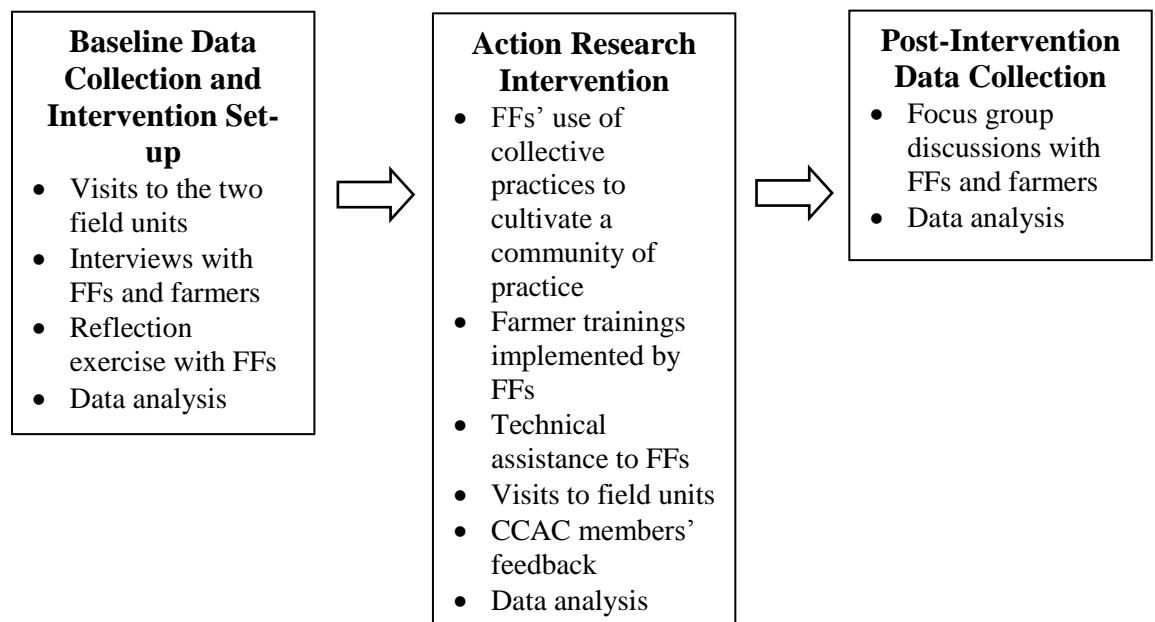
¹¹ The action research interventions include: (a) FFs' use of collective practices—collective planning, observing, reflecting, and documenting—to cultivate a community of practice; and (b) project interventions—CCAC vision building exercise and action plan 2012, orientation on roles and responsibilities, formation of CCAC sub-committees—implemented to improve farmers' ownership of groundwater management and monitoring of weather parameters.

farmer trainings—in improving the way FFs and farmers communicated and worked together. Action research, coined by Lewin (1944), involves planning, action, reconnaissance or fact finding about the action, evaluating the actions, and planning for subsequent actions (Smith, 2007). It involves collaborative inquiry to address specific problems confronting everyday lives to find effective solutions. The inquiry process is systematic and focuses on localized solutions to the particular situations. The research is usually an extension of activities that the group or individuals are already engaged with. Stakeholders undertake systematic inquiry through collecting data, reflecting and analyzing the data, developing a deeper understanding of the issues at play, and devising strategies and action plans. Thus, participants engage in continuing cycles of investigation to improve practice (Stringer, 2007). The researcher is not an ‘expert’, but a resource person or facilitator who assists the stakeholders in defining the problem clearly and supports them in exploring effective solutions to the issue/s (Stringer, 2007).

FFs in each of two field units collectively developed training plans to use with the Climate Change Adaptation Committees (CCACs), implemented trainings, observed facilitation of their peers and provided feedback, reflected on interactions with CCAC members, and drafted reports that documented the activity plans, training process and outcomes, and their collective reflections on the farmer trainings. The process involved a collective self-inquiry undertaken by field facilitators to reflect on their current farmer training practices, identify ways to improve their practices, implement or experiment with new practices, gather data on implementation, evaluate the actions and identify next steps. This process led to development of training practices grounded in the context and further strengthened effective practices (Smith, 2007). Also, the process instituted

reflection and assessment as an ongoing process that informed field facilitators of the effectiveness of their capacity building activities with farmers. While the process was collaborative, it was achieved through the critical examination of actions of individual group members. As the researcher, I was a co-facilitator and an active learner in the process. Similarly, field facilitators were partners in the research in the collective inquiry (Wadsworth, 2001; Selener, 1997).

We (my co-researcher and I) implemented the action research from August 2011 through October 2012. The research was divided into three phases—pre-intervention, intervention, and post-intervention. We conducted the following actions in the three phases illustrated below:



The actions in the pre-intervention and post-intervention phases were one-time actions. However, the actions in the action research intervention period were cyclical and ongoing between October 2011 and September 2012.

Setting up the Research

At the time of the research, I served as a subject expert on community organization for the Strategic Pilot on Climate Change Adaptation (SPACC) project. I continued in that capacity until the end of the project. I was responsible for the design and coordination of strategies for building Community Based Institutions (CBIs) in the project. Additionally, I provided technical assistance on usage of non-formal education methods and experiential learning processes in farmer trainings. This involved facilitating training of trainers (ToTs) for Partner Non-Governmental Organization (PNGO) staff, working with them to demystify technical information, and designing and developing various materials and models for use in farmer trainings.

From 2003 to 2010, I had been associated with the same set of PNGOs on the Andhra Pradesh Farmer Managed Groundwater Systems (APFAMGS) project. On that project, I coordinated efforts to provide technical assistance to project staff in incorporating participatory approaches and experiential learning processes to increase farmer participation. Also, I played a key role in the design of the Farmer Water Schools (FWS)—an extended, participatory and experiential training for farmers in groundwater management. My long association with these farmer training project stakeholders, familiarity with the project setting and knowledge of the Telugu language encouraged me to use the SPACC project as the field site for my dissertation research.

After my return to Hyderabad in June 2011, I had separate informal initial conversations with the SPACC Project Manager and the Executive Director of BIRDS, the lead implementing NGO, to share my dissertation interests and seek their support. My association with both individuals began in the APFAMGS project. Both valued non-

formal education (NFE) and acknowledged the role that NFE played in demystifying the technical content in Farmer Water Schools. They expressed their support and advised me to coordinate directly with the partner NGOs that I would choose for my dissertation research rather than seek formal approval from the project. Following their advice, I held informal discussions with executive directors of the partner NGOs of the SPACC project to identify sites for my dissertation research.

I also shared the objectives and goals of the dissertation research with a former colleague¹², who at that time was a Project Officer on the SPACC project. He expressed interest in participating in the dissertation action research process (data collection and analysis) as he believed that it would contribute to his work on the project and also enrich his knowledge of NFE. He became a valuable co-researcher for the study. Together, we formed our own “researcher” community of practice, wherein we collectively discussed the data collection process, gave feedback on FFs’ reports, assisted them in capacity building, and reflected on our experiences. As Project Officer, this co-researcher—provided technical assistance to field facilitators on NFE. He was in regular contact with field officers and field facilitators. As such, he had an excellent grasp of the field and FFs’ needs and concerns. On the other hand, in my position, I provided technical advice to the project on institutional and capacity building strategies. Given our roles, my co-researcher’s interest and assistance was an invaluable support in carrying out the action research.

In the next section, I describe the sample selection, which includes a discussion on rationale for choosing the field units and description of the study participants—FFs and farmers.

¹² Sivaprasad Seela

Sample Selection

I chose two specific NGOs for my dissertation research because I had good rapport with the Executive Directors of both organizations in the past, and they had, over time, demonstrated openness to the introduction of innovations in their organizations. Both directors recognized the importance of NFE training in building staff and institutional capacities. I held informal conversations with them to share my dissertation research objectives. Both were supportive of my research interests and encouraged me to pursue my dissertation research with their field unit teams¹³ and farmer participants. Also, I had a good working relationship with field officers of the two field units chosen as research sites. Both are former staff of the APFAMGS project and worked as NFE facilitators in that project. Both recognized the value of NFE inputs in improving interactions between farmers and field facilitators.

The two field units I chose for the research were in adjoining districts. Both were located in the Rayalaseema¹⁴ region of Andhra Pradesh. It took more than 10 hours of travel from Hyderabad to the field offices of either of these field units and over 6 hours to commute between the two field offices. Though the two field offices were located in adjacent districts where the spoken language is Telugu, the dialects were distinct. While a typical Rayalaseema dialect is used at one place, the Telugu spoken in the other is influenced by its proximity to Karnataka State, where Kannada is the vernacular language.

¹³ Both NGOs implement projects other than SPACC. Staff of the NGO implementing the SPACC project is called the field unit team. A Field Officer leads the field unit.

¹⁴ Characterized by hard rock terrain and semi-arid conditions

I made initial visits to the Field Units in 2011 in the months of August (24th and 25th), September (13th to 16th), and in October (14th). My co-researcher joined me during these visits. During the visits, I met with the Executive Directors of the two PNGOs and Field Officers and shared the objectives of my research. Following this, all of us met with the Field Facilitators, where I shared the objectives and goals of my research with them, clarified the principles of informed consent and anonymity, and right to withdraw from the study and requested their participation in the research. FFs felt that participation in the research would enhance their capacities. Later we discussed the characteristics of CCAC members (farmers). I stressed the importance of selecting participants representing a range of different types of CCAC members and choosing both female and male members for the study. For the purpose of the baseline, I interviewed four FFs from each field unit (eight in all) and seven farmer CCAC members (four from one field unit and three from the other field unit).

Each field unit was to have five FFs and a Field Officer. Of the five FFs, one was to be a Professional Land and Water Management (P-LWM) facilitator, one a Professional Non-Formal Education (P-NFE) facilitator, and the remaining three Village Coordinators (VCs). However, there were only four FFs in both the field units when the baseline data was collected. Both field units hired the fifth FF a month or two after the study began (September in the case of Field Unit 1; and November in Field Unit 2). Thus, I interviewed only four FFs in each of the field units for the baseline. In Field Unit 1, one P-LWM, one P-NFE facilitator, and two VCs were present.

- The P-LWM was a fresh graduate and had just completed his course work. As part of the course work he had worked for six months with farmers. He had no

other work experience. The P-LWM left for another job¹⁵ in February 2012 and he was replaced by an agriculture graduate in March 2012.

- The P- NFE was a graduate with 20 years of experience. He had worked as a village coordinator in the previous project with the same NGO and therefore had good knowledge of the groundwater management concepts and good rapport with farmers of the area.
- Of the two Village Coordinators, one was female. The female VC had a post graduate degree in social science. She had over five years of experience working with rural communities, primarily mobilizing women and out-of-school girls.
- The other Village Coordinator was a male with six years of experience. He had also worked as VC in the previous project with the same NGO and therefore had good knowledge of the groundwater management concepts and good rapport with farmers of the area.
- The third VC, a male, was recruited in September 2011 and so was not interviewed during baseline. He had a post graduate degree in sciences. He had 16 years of work experience on community watershed management issues and one year of work experience in the previous project.

In Field Unit 2, one Professional Land and Water Management (P-LWM) facilitator and three Village Coordinators (VCs) were present when the baseline data was collected.

¹⁵ Agriculture graduates have good job prospects since the state government recruits them in large numbers. The number of students graduating each year is less than the number available jobs.

- The P-LWM was a fresh graduate and had just completed his course work. As part of the course work he had worked for six months with farmers. He had no other work experience. The P-LWM left for another job in May 2012. The field unit recruited another agriculture graduate immediately.
- Of the three VCs, one was female. The female VC had a post graduate degree in social work. She had one year of experience of working with rural communities. The female VC left for a better opportunity in May 2012. The field unit recruited a male VC, who was a graduate with four years' work experience in the private sector and unrelated to the current project. Of the remaining two male VCs, one had six years of experience and the other had 8 years of experience. Both of them worked as VCs in the previous project with the same NGO and therefore had good knowledge of the groundwater management concepts and good rapport with farmers of the area.
- The P-NFE, a male, was recruited in November 2011 and so was not interviewed during baseline. He had a post graduate degree in sociology and 19 years of experience working with farmers on groundwater management issues. He worked as VC in the previous project for six years and therefore had good knowledge of the groundwater management concepts.

In all, five FFs—three in Field Unit 1 and two in Field Unit 2—continued from the beginning till the end of the study and five new FFs—two in Field Unit 1 and three in Field Unit 2—were recruited by the two field units at different points after the study began. Those FFs joining the study along the way were quickly integrated into the action research activities.

Of the four farmers interviewed in Field Unit 1 for the baseline, one was a female and three were male. All of them had studied up to grade 10, and one male farmer was a college graduate. Also, all of them were members of the Hydrological Unit Network (HUN), the apex farmer institution at the Hydrological Unit level. All of them cultivated groundnuts.

- The female farmer had two acres of land and was thus considered a “marginal” farmer. She cultivated groundnuts and finger millet.
- Two of the male farmers had three acres of land and the college graduate had three and a half acres of land, thus making them “small” farmers. Aside from cultivating groundnuts:
 - One of the male farmers with three acres of land cultivated red gram and beans;
 - The other farmer with three acres of land cultivated tomato, beans, cauliflower, and carrots; and
 - The college graduate also cultivated tomatoes. Tomato was the main vegetable crop grown in that area.

Two additional farmers joined the focus group discussions conducted in the post-intervention phase. Of these, one was a male farmer and another was a female farmer. Both were small farmers with landholdings of five acres. Besides tomatoes, the male farmer cultivated leafy vegetables and the female farmer cultivated paddy and sugarcane. In terms of education, the female farmer studied up to grade 10 and the male farmer studied up to grade 12. Both were members of the local CCAC.

Of the three farmers interviewed in Field Unit 2 for the baseline, one was a female and two were males. They were all members of the Hydrological Unit Network.

- The female farmer had studied up to grade 10 and had seven acres of land. She cultivated cotton, sunflower, and bajra. Additionally, she cultivated paddy on a small part of her farm for domestic consumption.
- The two male farmers had completed grade 12 and had four and five acres of land, respectively. Considering the size of their landholdings, both of them were small farmers. They cultivated cotton and sunflowers. One of the two also cultivated paddy on a small part of his farm, mostly for domestic consumption.

Four additional farmers joined the focus group discussions conducted in the post-intervention phase. Of these, two were male farmers and two were female. The two male farmers had landholdings of eight and 12 acres, while the female farmers had landholdings of 10 and 15 acres. They cultivated sunflowers, aside from paddy and cotton. In terms of education, one female and two male farmers studied up to grade 10 and another female farmer studied up to grade 5. All were members of the CCAC.

The action research was a natural extension of the everyday activities that the research participants and researchers were engaged in through the SPACC project (Stringer, 2007). The research participants (FFs) and the researchers (my co-researcher and I) were SPACC project employees. Apart from that, issues that this dissertation research addressed were within the project domain. Despite the tacit support of the project management and the two PNGOs, we made conscious efforts to ensure that the

action research fit within the structural arrangements¹⁶ of the SPACC project. The research inputs, especially capacity building inputs like trainings provided to field facilitators and farmers, were synchronized with project activities and outputs. Additionally, as project employees, field facilitators and I had full-time commitments towards our respective jobs. Therefore, face-to-face interactions with the research participants, i.e. field facilitators and CCAC members, had to take place simultaneously alongside the project activities.

I shared the purpose of the study and elaborated the voluntary aspect of participation in the study with each of the research participants. I then shared with them the informed consent form and clarified their questions. I also shared with the research participants the norms of confidentiality and that I would mask their identities. I explained that I would be using excerpts from their individual interviews, collective reports (in case of FFs), and focus group discussions to support my findings and conclusions. Further, I inquired if they needed any clarifications (Guillemin & Gillam, 2004). Despite making clear that participation was voluntary and that they were free to withdraw at any point of time, once recruited, research participants might sometimes feel obliged to participate in the study. To address this “potential power imbalance between the researcher and the participants” (Etherington, 2007, p. 614), I reiterated the ‘voluntary’ aspect to the research participants in various interactions and during the progress of the study. I made conscious efforts to win the confidence of field facilitators and CCAC members by being transparent, discussing principles of mutual respect, trust, and keeping things simple and plain (Rossman & Rallis, 2003). After this, I requested that they sign the informed consent form to give their consent to participate in the study.

¹⁶ SPACC project structural arrangements are discussed in depth in the Chapter 1: ‘Introduction’.

Both the FFs and farmers evinced interest in participating in the research as they felt that the research would address important concerns in the field. I have accordingly masked the participants' identities in the study.

Research Methods and Data Collection

I used multiple and humanistic methods to generate data for this research (Rossman & Rallis, 2003). The methods included observing trainings and CCAC meetings, conducting individual interviews with field facilitators and CCAC members (farmers), documenting the outputs of reflection sessions with field facilitators, observing CCAC capacity building activities, recording CCAC capacity building activities, maintaining a journal on the process and observations in the field, requesting field facilitators to maintain and share their journals for the purposes of the research, and conducting focus group discussions with CCAC members and field facilitators on their interactions in CCAC capacity building activities. My co-researcher and I collected these data between August 2011 and October 2012.

Baseline

Baseline activities were carried out to learn more about how FFs and farmers communicated and worked together and to better understand their current communication practices and identify strategies to improve them. The methods I used to collect this information included: (1) my own visits to the two field unit sites, (2) my interviews with FFs and farmers, (3) and a reflection exercise with the eight FFs participating in the study.

My visits to the two field units: I made initial visits to the two field units in 2011 on August 24 and 25, September 13 to 16, and October 14. My co-researcher joined me during these visits. During these initial meetings, the objectives of the research were clarified with NGO senior management and with the field facilitators chosen to participate in the study. In sharing the objectives and goals of my research, I clarified the principles of informed consent and anonymity, and the right to withdraw from the study as I requested their participation in the research. The FFs felt that participation in the research would enhance their capacities. Also, I visited SPACC project village sites and interacted with CCAC members individually and in small groups, and participated in farmer meetings to develop a better understanding of how FFs and farmers communicated and worked together.

Interviews with field facilitators and farmers: I interviewed four FFs from each field unit (eight in all) and seven CCAC members (four from one field unit and three from the other field unit) for the baseline. The interview questions for the FFs focused on their interactions with farmer participants in various farmer capacity building activities. The interviews were structured more as a conversation than as a question-answer format. Our conversations with the field facilitators were guided by the following questions:

- What farmer capacity building activities are you currently implementing with farmers?
- What is your goal in working with farmers?
- What are exciting moments in interactions with farmer participants? Elaborate.
- What challenges and frustrations do you encounter in farmer trainings? Elaborate.
- How do you know that a particular training session or interaction was effective?

- What should be the criteria to evaluate the effectiveness of a training session or interaction?
- What do you learn from facilitating a training session with farmers?
- What challenges do you encounter in changing or improving farmer practices?
- What do farmers contribute to a training session?
- How can we improve CCAC members' participation in training workshops?

We recorded interviews with the seven CCAC members/farmers. The interview questions for CCAC members focused on their interactions with field facilitators while participating in various farmer capacity building activities. The interviews were structured more as a conversation than a question-answer format. The following questions were used in my conversations with the CCAC members:

- On what topics/issues are field facilitators interacting with you?
- How are those inputs useful to you?
- What do you like about your interactions with field facilitators? Elaborate.
- What is your feeling after interacting with field facilitators? Elaborate.
- What opportunities do you have to contribute your knowledge and experiences in training or during interactions with field facilitators?
- What suggestions do you have to improve farmers' (CCAC members') participation in trainings or during interactions with field facilitators?

We interviewed the CCAC members either at or near their homes or in their fields, and in some instances we interviewed in the field unit offices or at farmer training venues. We interviewed the FFs of the two field units in their field unit offices. Thus, we

were present in their (research participants') "natural settings" and had the opportunity to triangulate the information using multiple sources (Rossman & Rallis, 2003, p. 69).

All discussions with the research participants were in Telugu, interspersed with English words that are commonly used in daily conversations. I used a digital voice recorder to record individual interviews with field facilitators and CCAC members. The first interview with each participant lasted about thirty minutes. In the individual interviews both with FFs and CCAC members, it took time for the participants to open up. Initially, their answers were brief and participants tried to convey to me that everything was going well. The first challenge was to break the ice and overcome the participants' defensiveness. As Kellehear points out, I wondered if this was a polite interrogation (Guillemin & Gillam, 2004, p. 271). As it was an open-ended interview, I had to constantly 'think on my feet'. It was a challenging experience. However, as the interview progressed, the participants became comfortable and the stories unfolded (Riessman, 1991). As my co-researcher and I listened to those difficult scenarios on the tapes, in order to transcribe the interviews and draft the case studies, we could sense the defensiveness of the participants and efforts of the interviewer to overcome those situations. It was a fascinating experience. Gould rightly describes interviewing as "a gutsy human enterprise, not the work of robots programmed to collect information" (Riessman, 1991, p. 233).

I did not experience particular challenges when interviewing women. Like other participants, they appeared to be comfortable after the initial hesitation. This was possibly because all the female participants were either field facilitators or CCAC members and they felt comfortable speaking to me as I was a project employee. It appeared to me that

female CCAC members felt privileged to have been selected as study participants. Aside from this, I believe that female participants felt comfortable to share their views as there were no male members from the community present during the interviews. Usually women in rural India feel inhibited to share their views and experiences before menfolk outside their homes for the fear of being ridiculed by them.

Reflection exercise with FFs: In addition to these interviews with FFs, and in preparation for designing the participatory action research that the FFs and I would do together, I facilitated reflection exercises in September and October 2011 with field facilitators in both field units. I focused the discussions on how FFs planned CCAC capacity building activities; what methods and tools they used to facilitate discussions in those trainings; how they evaluated the training outcomes; how they identified successes, challenges, and learning; and how they documented training outcomes.

During the reflection exercises in both locations, FFs acknowledged the importance of systematic planning, observing interactions with farmers, reflecting on the interactions with farmers, and documenting the learning¹⁷ from facilitating CCAC capacity building activities (trainings and meetings¹⁸). However, the discussions revealed that FFs did not engage in collective planning for individual trainings. Aside from that, developing a training plan for each training was not a regular practice prior to the action

¹⁷ Prior to the action research intervention, FFs did not engage in collective reflection following the implementation of a farmer training. Learning identified by FFs in collective reflection could include: were the training methods effective in delivering the training content and improving farmer participation? Did the farmer participants find the materials useful? What changes need to be made in the training plan for effective implementation of the subsequent trainings?

¹⁸ **Farmer trainings** are specific activities designed to build capacities of farmers. **Farmer meetings** are scheduled periodically, once a quarter for the Hydrological Unit-level CCAC. FFs usually participate in the farmer meetings to assist the HU-CCAC President and Secretary in conducting the meeting. Also, they may participate to observe the proceedings. Additionally, they may on some occasions use the meetings to facilitate a discussion on a particular topic, for example roles and responsibilities of CCAC members, selection of Farmer Climate School (FCS) participants and pilot farmers, selection criteria for establishing PCM stations, etc.

research intervention. Similar to the development of training plans, practices related to reflection were restricted to major trainings. Here too, the focus was on logistics, farmer attendance, and overall conduct of the program. Aside from this, report writing seemed to have been restricted to documenting major farmer trainings. It appeared that documentation of such trainings was done largely for submission of reports to project management.

FFs in the project field units under study participated in monthly review and planning meetings where they collectively developed monthly action plans. However, this planning, according to FFs' comments at baseline, appeared to be largely logistical. They laid out the plan for the current month in a table format indicating date, place, activity, and person responsible. After returning from a farmer meeting or training, field facilitators recorded their travel in the 'movement register'. The register contains space to record date, departure time, person name, village visited, arrival time, and remarks. FFs reported that they used the 'remarks' column primarily to record reasons for their inability to reach the field site, such as transportation problems, or weather conditions. There was no standard practice in place to share issues or concerns, collectively reflect on the particular experience, identify learning, strategize, and plan for follow-up.

Accordingly, I worked with FFs to develop new activities (the "action" or intervention), which included a planning format, a reporting format, and an observation checklist that they used to plan, observe, reflect on and document their work—meetings and trainings—with CCAC members. FFs agreed to use these formats to document their observations and reflections on the outcomes of their future participation in CCAC capacity building activities. Therefore, the main "action" that we researched in this study

was the addition of a new mechanism for FFs to collectively plan, observe, reflect, and document their interactions during training and meetings with CCAC members. The mechanism was called the *Field Facilitators' Planning Format* (See Appendix B) and *Field Facilitators' Reporting Format* (See Appendix C), and a new mechanism (*Observation Checklist*) for FFs to observe their peers facilitating meetings and trainings with CCAC members (See Appendix D).

In short, the goal of the collective practices was to improve project success by helping facilitators to engage in a community of practice to improve the effectiveness of capacity building activities with farmers. **The goal of the research** was to see whether FFs actually used these collective practices; how farmers viewed their ownership in the project before and after the FFs used the collective practices; how FFs felt about their work together after FFs used the collective practices; and what other factors (in the views of FFs and farmers) influenced their communications and work together. In the section below, I provide more detail about the action research intervention to build collective practices and a community of practice among FFs.

Action Research Intervention

The purposes of the action research intervention were three-fold: (1) help FFs cultivate new collective practices, (2) to help FFs implement farmer trainings to build farmers' ownership of groundwater management and weather monitoring, and (3) to generate data on FFs' and farmers' perceptions on how they communicated with each other and worked together. The activities in the action research intervention included: (1)

FFs' collective practices¹⁹, (2) technical assistance to FFs, (3) farmer trainings, (4) my co-researcher's and my visits to the two research sites, (5) audio recordings of CCAC trainings and capacity-building activities, and (6) CCAC members' feedback.

FFs' Collective Practices

I used the communities of practice framework as the organizing theory for the intervention that the field facilitators implemented as part of the action research. In the project setting, field facilitators formed a community of practice—sharing resources, experiences, learning, and strategies. FFs' collective practices included: collective planning, peer observations of facilitation, collective reflections, and documenting farmer trainings or meetings. The specifics of these practices were:

Collective planning: FFs engaged in collective planning prior to each farmer capacity building activity. Collective planning included discussion of training objectives, roles and responsibilities, and logistics (date, time, venue, and transportation for example). The discussions also involved reflecting on previous capacity building activities with the CCAC members to develop a plan that ensured continuity between the trainings. This involved reviewing the previous training report to discuss issues that needed to be addressed from the previous training and identifying strategies for effective implementation of the current training. The discussion output, a training plan, was documented using the FFs' planning format.

Peer observations of facilitation: During farmer training activities, FFs used an observation checklist to record their observations on the facilitation of their peers.

Various indicators on training arrangements, facilitation in the training, and participation

¹⁹ Collective practices included collective planning, peer-to-peer observation and feedback on facilitation, reflecting on farmer trainings, and documenting farmer trainings

of farmer participants were listed in the observation checklist. Performance or achievement of each indicator was evaluated qualitatively using: ‘none’, ‘need to improve’, ‘fair’, ‘good’, and ‘excellent’. For example: against the indicator ‘facilitator encourages farmers to ask questions’, an observer can mark either ‘none’, ‘need to improve’, ‘fair’, ‘good’, and ‘excellent’, depending on whether the facilitator encouraged farmer participants to ask questions in the training.

Initially, a relatively more experienced FF acted as an observer as other FFs facilitated. The FFs switched responsibilities, of facilitation and observing, between trainings. Eventually, all FFs had an opportunity to observe. Aside from recording his/her observations, the observer also recorded suggestions on how to improve the facilitation on the reverse side of the observation checklist. After the completion of the training, these observations and suggestions were used to provide feedback to particular individuals during the team’s reflection on the training. In addition, FFs used observations and suggestions to identify methods for improving facilitation skills and strategies to make trainings more effective.

Collective reflection on the training/meeting (including development of a follow-up action plan): A day or two after the implementation of a farmer training activity, the five-person team of FFs in each field unit collectively reflected on the specifics of the training, such as farmer attendance, farmer participation, facilitation methods, materials used, logistics, achievement of objectives, issues that emerged during the training, and strategies to address those issues. The discussion primarily focused on ‘what went well’, ‘how to improve’, and ‘what follow-up was necessary’. Following this, FFs developed a follow-up action plan.

Documenting farmer trainings or meetings: Following the group reflection on the training or meeting, the team documented the training or meeting using a reporting format that recorded the achievements and team's reflections. The reports were drafted in Telugu. The contents included: place, date, objectives, activities planned and roles, materials used, observation checklist, objectives achieved, issues that needed to be addressed, learning, follow-up plan and strategy. FFs referred to the training or meeting report when planning subsequent farmer trainings and meetings. Thus, this served as a future reference and helped FFs to reflect on past activities when planning subsequent activities.

For purposes of this research, these processes were construed as collective practices that FFs used in their interactions with farmers.

The intervention that I developed with the FFs was based on their current practices. Thus, the intervention represented an “evolution” to their current practices. The intervention was a natural extension of the everyday activities that the FFs and we (researchers) were engaged in through the SPACC project (Stringer, 2007). FFs used planning-observing-reflecting-documenting to improve their work and interactions with farmers. We introduced these collective practices to assist the FFs in their efforts to build institutional capacities of CCACs for climate change preparedness. Thus, the collective practices “combined familiarity and excitement” for FFs in their efforts to build institutional capacities of CCACs for climate change preparedness.

I emphasized to the FFs that they were not obliged to use the action research format. I shared with them that my goal as a researcher was to study the impact of collective practices on how FFs and farmers communicated and worked with each other. I

reiterated the ‘voluntary’ aspect of participation to the research participants in various interactions during the progress of the research. They volunteered to participate in the action research as they believed that the collective practices would help their interactions with CCAC members and improve the participation of CCAC members in farmer trainings and meetings. However, given the support of the Executive Directors and Field Officers of the two field units for the study, I understand that the FFs may have felt obliged to participate in the action research. I kept participation of individual FFs in the study open ended by not specifying roles and responsibilities of individual FFs in the implementation of the study. Therefore, levels of participation of individual FFs varied, as some took on more responsibility than others. As I could not be regularly present as FFs went about their collective practices, I did not collect data on levels of participation in their collective practices. I had to rely on my observations when I could be present, and those of my co—researcher when he was present, and on individual FF self-reports.

I asked the field facilitators to engage in collective planning exercises that included discussion of training objectives, roles and responsibilities, and logistics (date, time, venue, and transportation for example) prior to a farmer training or meeting. During farmer training activities, FFs used an observation checklist to record their observations on the facilitation of their peers. Aside from recording his/her observations, the observer also recorded suggestions on how to improve the facilitation. After the completion of the training, these observations and suggestions were used to provide feedback to particular individuals during the team’s reflection on the training.

After the conclusion of a training or CCAC meeting, FFs collectively reflected on specifics of the training, such as farmer attendance, farmer participation, facilitation

methods, peer observations, materials used, logistics, achievement of objectives, issues that emerged during the training, and strategies to address the issues. The discussion primarily focused on ‘what went well’, ‘how to improve’, and ‘what follow up should be done’. This also involved reflecting on previous capacity building activities with the CCAC members to develop a plan that ensured continuity between the trainings, so that uncovered issues from the previous training could be covered in the planning of the next training. FFs could also have had one-on-one conversations with their colleagues to plan and reflect on the individual tasks assigned to them. For example, two FFs could be discussing strategies to engage farmers on a particular topic or use the observation checklist to discuss ways of improving their facilitation skills and strategies to make trainings more effective. We did not establish norms for participation or the amount of effort individual members needed to put in for their participation. Individuals participated in the practice based on their abilities and interest.

Following the collective reflections, FFs documented the planning and reflection outcomes. Thus, planning-observing-reflecting-documenting was integrated in the FFs’ ongoing work, and the fact that they did such planning and reflection together was intended to help them build a community of practice. Also, these set of practices created a “collective rhythm” for FFs in their regular work. All the FFs in each of the two teams were by default members of their community of practice. The introduction of collective planning-observing-reflecting-documenting activities merely streamlined their current actions for effective outcomes.

Thus, the intervention being tested in the action research was collective self-inquiry undertaken by field facilitators to reflect on their current practices, identify ways

to improve their practices, implement or experiment with new practices, gather data through peer observation, evaluate their actions and identify next steps. Thus, the planning-observing-reflecting-reporting-planning process facilitated “dialogue amongst the insiders”.

A supportive work environment was critical to initiate and sustain FFs’ collective practices. FOs provided invaluable support in initiating FFs’ collective practices and encouraging them to continue to engage in collective planning, observing, reflecting, and documenting of farmer trainings. Also, they played a mentoring role with FFs to sustain the collective practices by participating in planning and reflection discussions, reviewing reports and giving feedback. Thus, the FO in each field unit played a significant role in the implementation of the action research implementation. FOs’ support for the action research intervention could have made it obligatory for the FFs to participate in the community of practice and thereby undermined the voluntary aspect of participation. Also, it could have introduced a bias in the data in support of the collective practices.

Technical assistance to FFs

I started to receive reports on various CCAC capacity building activities facilitated at the field units at the end of September 2011. Initially, the FFs at one field unit kept individual journals of their daily field visits while the FFs at the other field unit drafted collective reports of their team’s farmer training activities. In reviewing the individual journals and training reports in early October 2011, I found that the individual journals maintained by the FFs were sketchy and had several mistakes. On the other hand, the collective reports provided more in-depth accounts of the farmer training activity and captured the team’s reflections effectively. From discussions with FFs and

field officers, we found that the FFs keeping individual journals were not discussing their field visit experiences and learning with their colleagues.

The field officers, FFs, my co-researcher and I felt that it would be more helpful for the FFs, as well as for the study, if they collectively reflected on their farmer training activities and used the output of their collective reflection exercise to draft the training report. This meant that the FFs in each team had to engage in collective planning, assign specific roles and responsibilities for the training activities, share feedback on each other's facilitation, collectively reflect on the outputs and outcomes of the field visit, discuss challenges, identify strategies and develop follow-up action plans. All of us felt that these collective practices, apart from facilitating group learning, could also lead to improved teamwork among the FFs within each field unit. Thus, the FFs engaged in the collective practices from October 2011 onwards.

Between October 2011 and September 2012, I received nine reports from one field unit and ten reports from the second field unit on various CCAC capacity building activities implemented by these teams. The addition of new FFs and staff turnover in both the field units did not affect the submission of reports. Also, my co-researcher and I did not notice any challenges in continuity of collective practices amongst FFs in the two teams. This was largely because the long-serving staff continued for the entire duration of the study in the two field units, the field officers supported the continuity of FFs' collective practices, and new staff were thoroughly oriented to the action research activities by senior FFs and FOs and quickly integrated into the action research process.

The FFs' new reports helped us (researchers) identify FFs' training needs and assisted us to develop follow up assistance plans for FFs. Our (researchers) feedback to

FFs focused on ways of improving FFs' planning, facilitation, report writing, and documentation skills. Further, this process (review and feedback) helped us (in our roles in the project) to develop specific strategies and capacity building plans to assist FFs.

Farmer Trainings

Between September 2011 and October 2012 FFs implemented various training activities to build the institutional strength of CCACs, increase their awareness of the concepts of climate change and variability, and the need to adapt to climate variability. Following are brief descriptions of these activities.

Vision building workshop: Reflecting on the baseline findings that 'farmers' interest in data collection was declining' and 'farmer institutions were observed as being passive in addressing maintenance issues of data collection equipment and deepening of wells in their hydrological units', my co-researcher and I brainstormed ways to increase farmer ownership and strengthen farmer institutions. We felt that an appreciative inquiry process could be used to develop a vision and action plan for HU-CCACs. When we shared this with the Field Officers and FFs, they too felt that doing a vision building exercise with the CCACs and developing an action plan based on the vision could reinvigorate the CCACs, improve their ownership of groundwater management activities, and increase awareness on the need to adapt to climate change and variability. We conducted a training of trainers (ToT) workshop in October 2011 for the FFs, which included FFs of other field units, on facilitating the vision building exercise with CCACs. Two FFs from all the nine field units were covered in the ToT. This was followed up by a ToT in November 2011 for the remaining FFs, which was facilitated by the previously trained FFs. Following this, the FFs facilitated vision building exercise workshops for

habitation-level CCAC members (farmers). Three workshops were organized in November and December 2011 at each field unit to cover all habitation-level CCACs in the particular field unit. Participating in the one-day workshop, CCAC members first reflected on the good practices in groundwater management and identified learning and areas in need of improvement. Further, they discussed the importance of community-based climate monitoring and developed a vision for their CCAC. Using the vision they developed an action plan for the ensuing year, 2012. Later, the HU-CCAC members discussed the outputs of this exercise to develop a vision building document and action plan at the hydrological unit level. My co-researcher assisted the FFs in planning of the first round vision building exercise workshops (in November 2011), observed the conduct of the workshop, shared his observations with the FFs, and facilitated reflection exercises for the FFs to identify ‘what went well’ and ‘how to improve’. He again visited the field units in the third round of workshops (in December 2011) to observe the organization and facilitation of these workshops.

Orientation on CCAC office bearers’ roles and responsibilities: From the FFs’ reports and our (mine and my co-researcher’s) observations during visits to field sites in November and December 2011, we noticed that the roles and responsibilities of the CCAC office bearers were generic. We and the FFs felt that aligning roles and responsibilities of the CCAC office bearers with the vision and activities of the CCAC would ensure accountability of the CCAC office bearers and improve the functioning of the CCACs. Accordingly, we revised the roles and responsibilities of CCAC office bearers. FFs used the revised roles and responsibilities to orient CCAC members to improve their awareness in March and April 2012.

CCAC sub-committees: The office bearers of the HU-level CCACs met once every quarter to review progress and to plan for the next quarter. Decisions reached in the meeting and action plans developed were followed up by the office bearers. On our (mine and my co-researcher's) visit to women's Self Help Groups (SHGs) in another project, we learned about the usefulness of the sub-committees in following up on decisions made at the organization level and in day-to-day monitoring of key activities. We shared our observations and learning with the FFs and requested them to discuss the usefulness of sub-committees with CCAC members. Following the positive response of the CCAC members, FFs worked with the HU-CCAC to form sub-committees in May and June 2012. Each sub-committee had three or more members drawn from the executive members of the HU-CCAC.

Other project interventions: Other project interventions that were implemented alongside the above trainings included: Participatory Climate Monitoring (PCM), Sustainable Land and Water Management (SLWM) pilots, and Farmers Climate Schools (FCS). These interventions were initiated in June 2012 and continued beyond the duration of the study.

PCM stations were constructed in May 2012 and data collection was initiated in the two field units in June 2012. It involved monitoring of daily weather parameters by local communities. This involved identifying sites for establishing climate monitoring system, selecting and training data collection volunteers, data collection, and dissemination of data. The objective was to build capacity of local communities to collect weather data and to discuss the dynamics of local weather and how it was impacting their current agricultural practices. SLWM pilots were initiated in Field Unit 1 in July 2012.

They included identifying locally relevant crop adaptation options and setting up crop-based pilots, monitoring them and assessing the performance of the pilots in terms of productivity and coping with climate variability. FCS was initiated in July 2012 in both field units. It was a year-long school coinciding with the hydrological year, June through May, and continues through different cropping seasons. Each FCS cycle had 12 sessions and participants met each month. Twenty-five to thirty farmer participants participated in a FCS. The same set of participants met in each FCS session. All the study participants participated in the FCS and FFs facilitated the FCS sessions. FCS demystified the concepts of climate change and variability, increase farmers' awareness on successful adaptation measures, and assisted farmers to make informed decisions to cope with climate change/variability.

Visits to the two field units

In the initial months of the action research (between September and December 2011), either my co-researcher or I visited the two field units monthly to observe interactions between FFs and farmers in farmer trainings, to provide onsite technical assistance to FFs in designing CCAC capacity building activities, participate in FFs' collective reflections, and to identify FFs' capacity building needs. Also, we interacted with CCAC members during our field visits. In order to develop a better perspective on the broad themes emerging from interviews, observations, and FFs' reports, I visited SPACC project village sites that were not within the geographic area of my research and interacted with FFs and CCAC members in those sites. In 2012, we visited the two field unit sites in September and October to collect post-intervention data.

During our field visits, my colleague/co-researcher and I discussed the study participants in our spare time and during our morning and evening walks. We reflected on our observations and experiences in the field. “Learning to trust the process” and “learning by doing” are the two principles that guided me through the data collection process in the field (Rossman & Rallis, 2003, p. 25). My co-researcher and I kept notes in which we jotted down our observations and reflections. We also reviewed and discussed the field notes that I maintained. Keeping the notes of our discussions and reflections was very helpful in reviewing and reflecting on the insights emerging from the study.

Audio recordings of CCAC trainings

Each CCAC training lasted between two to three hours. In all, FFs in each field unit conducted three vision-building trainings to cover all the habitation-level CCACs in the particular field unit. My co-researcher audio recorded the first and third workshops in both field units, as I could not be present. My co-researcher and I planned to use the recordings to review the impact of FFs’ collective practices on their communication with farmers. The farmer interactions in these workshops were mostly in small groups. The recording captured participants’ voices from multiple groups and, as a result, there were frequent voice overlaps. As there was no voice clarity, we found it difficult to identify audio recordings of particular interactions that could be used for the purposes of the research.

CCAC members’ feedback

FFs decided that it is important to seek farmer participants’ feedback to develop a better understanding of the effectiveness of the CCACs institutional capacity building activities on farmers’ practices. We advised them to collect feedback from the same set of

farmer participants on the different capacity building activities. Along with the farmers interviewed for the baseline, they also sought feedback from a few additional farmers whom we later included in the post-intervention focus group discussions. The FFs reported that these farmers were regular attendees and were usually more forthcoming in sharing their views and experiences in farmer trainings and meetings. The FFs used a set of simple questions to collect the feedback. These included:

- *What did you think about the training?*
- *How was it useful to you as a CCAC member?*
- *What do you think about the training methods used in the training?*

FFs sought the CCAC members' feedback a few weeks after the implementation of each CCAC capacity building activity. These conversations between the FFs and CCAC members in the intervention helped FFs get feedback from "outsiders" or stakeholders to improve their community of practice. The conversations between the FFs and CCAC members were in Telugu. FFs wrote down the CCAC members' responses. They shared those responses with me. I decided to use this data to inform the research as a way to acknowledge FFs as partners in the study. I was conscious that this could have introduced bias into the data. My co-researcher and I correlated this data with analysis of FFs' documentation, notes from our visits to the field units, and post-intervention focus group discussions.

Post-Intervention Data Collection

The purpose of the post-intervention activities was to learn about (1) FFs' perceptions of their use of the collective practices and impact of the use of the practices

on their communication and work with farmers, and (2) farmers' perceptions on communication and work with FFs, and ownership of groundwater management and weather monitoring. The goal of collecting data about FFs' and farmers' perceptions was to understand how and whether FFs' collective practices had improved how FFs and farmers communicated with each other and worked together. The post-intervention activities included focus group discussions, conducted separately, with FFs and farmers.

Focus Group Discussions (FGDs): Doing individual interviews in the post-intervention phase would have helped capture the change across each individual from participation in the study. However, we decided to use focus group discussions to capture post-intervention reflections with FFs and CCAC members/farmers. We felt that the study participants would feel more comfortable sharing their views in small groups. As both my co-researcher and I work in the Project Management Office, FFs and CCAC members might find it challenging to do an individual interview with us because they perceived us to be higher up in the hierarchy. We felt that we could lessen the power distance when we took on the role of facilitators in a focus group discussion. We thought that this would make participants more forthcoming in sharing their experiences and views. Also, individual participants could contribute to the viewpoints emerging during the discussion. In addition, there had been staff turnover in both the field units. Therefore, we felt that FGDs would help capture the perspectives and experiences of the newer members on various points emerging during the discussion. These members had engaged in the collective practices for several months. Therefore, it was important to seek their perspectives as well. I wish to acknowledge that we may have lost out valuable individual data by relying solely on focus group discussions.

In particular, we used the focus groups to collect data to answer the research question of “what FFs reported about their communications and work with farmers after the action research intervention” and “what farmers reported about their communications and work with FFs after the action research intervention.” Thus, the questions driving our focus group discussions focused on how FFs and farmers felt about their communications and exchanges with each other.

I used the following questions to facilitate FGDs with field facilitators to capture their post-intervention reflections:

- *Please reflect on your experiences when facilitating CCAC capacity building activities and share:*
 - *Satisfying moments—what did you like about the particular training moment?*
 - *Moments that caused dissatisfaction/frustration—what is it that made you feel frustrated?*
 - *Challenges in facilitating farmer participation—sharing their experiences and opinions; and*
 - *Ways to improve farmer participation in trainings.*
- *Please discuss your practices—prior to the intervention and current practices—and perceived outcomes of those practices.*

We conducted each focus group discussion with the four FFs in each field unit in their respective field unit offices in October 2012. Each FGD lasted for close to two hours. I facilitated the discussions and my co-researcher kept notes of the discussion outputs.

Likewise, we facilitated FGDs separately with small groups of farmers, all of whom were CCAC members. These farmers had been regular participants in the farmers' trainings and CCAC meetings. It was difficult to gather the same farmer participants who participated in the baseline for the focus group discussions at one place and time. So, we conducted two separate focus group discussions in each field unit (a total of four FGDs with farmers). Also, we decided to include the CCAC members whose feedback the FFs had sought on various CCAC capacity building activities during the action research phase. We felt that involving these additional CCAC members would help us correlate with the feedback they had shared with the FFs on the CCAC capacity building activities.

In Field Unit One, we conducted one focus group discussion with four male research participants in one of the participant's field immediately after a farmer training. The four male research participants said that it was convenient for them to do the focus group discussion immediately after the training. However, the female research participants requested us to come to their village in the evening to do the focus group discussion adjacent to one of the women's home. My co-researcher and I decided that it would be convenient to do two focus group discussions, one for the male farmers immediately after the training and another for female farmers later in the evening. Also, we felt that female farmers may be more forthcoming in sharing their views in an all-female discussion. The four male research participants, my co-researcher and I waited for a few minutes after the training concluded for the remaining training participants to disperse and then conducted the focus group discussion with four male farmers. Later in the evening, we conducted a focus group discussion with the two female farmers in the village adjacent to one of their homes.

In Field Unit Two, we conducted one focus group discussion with four male research participants at the field unit office immediately after a farmer training. The four male research participants said that it was convenient for them to do the focus group discussion immediately after the training and preferred to do it at the field unit office as they wanted to attend to their personal work in the town after the focus group discussion. The three female research participants requested that we come to the village of one of the female participants the next morning and the other two promised to reach her home at the appointed time. Here, too, my co-researcher and I decided that it would be convenient to do two focus group discussions, one for the male farmers immediately after the training and another for female farmers the following morning.

My co-researcher and I used the following questions to facilitate the FGDs with farmers:

- *In the past few months, the field facilitators conducted various trainings, such as CCAC Vision-building trainings, and participated in CCAC meetings to build the institutional capacity of the CCACs. Please reflect on your participation in those trainings and meetings and elaborate:*
 - *satisfying moments*
 - *moments that caused dissatisfaction/frustration*
 - *challenges to participation or sharing your experiences and views*
 - *ways to improve farmer participation in trainings and meetings*

Thus, the focus group discussions with the CCAC members were conducted either in their fields adjacent to the training venue, or near their homes or at the field unit

offices. Thus, we were present in their (research participants) “natural settings” (Rossman & Rallis, 2003).

We conducted the focus group discussions with the research participants in Telugu, interspersed with English words. My co-researcher and I took turns in facilitating the discussions and keeping notes of the discussion outputs. We did not audio record the focus group discussions as we were concerned about overlap of participant voices. Also, farmer participants could become conscious in the presence of a voice recorder. We kept notes of the key points in the discussions. Immediately after the completion of a FGD, my co-researcher and I reviewed the notes and made necessary additions. After returning from the visits to the field units, we translated the focus group data into English.

Data Management

My co-researcher and I listened in full to each of the baseline interviews—the eight FFs and seven CCAC members. The data was a verbal interpretation of FFs’ experiences as farmer trainers and of farmers’ experiences participating in farmer trainings. We then transcribed sections that we found relevant to the research questions. Transcribing was a tedious process, requiring lots of patience and commitment. As the researcher, transcribing the digital files provided me an opportunity to listen closely to the recorded conversation. This process gave me more insights into what the interviewee had shared (Lapadat & Lindsay, 1999). Also, it provided me the opportunity to catch the nuances of the local dialect. We also reviewed FFs reports—nine from Field Unit 1 and ten from Field Unit 2. The FFs’ reports were in Telugu. We identified and marked relevant sections in reports for data analysis. We did the same with the FFs’ interviews

with CCAC members to collect feedback on capacity building activities that FFs implemented and post-intervention focus group discussions of FFs and CCAC members.

Translating the data into English was challenging. The structure of Telugu language is different from that of English. Another issue was that respondents sometimes left a sentence incomplete during the conversation. While translating, I had to make conscious efforts to keep myself from inserting the unspoken words. Apart from that, I was often caught in a dilemma as to which particular word best suited the context of the discussion. It required a decision-making process to either choose the appropriate word or translate the literal meaning of the word. I decided to do the literal translation and incorporated the word, appropriate to the context, in parenthesis.

I had four audio recordings of the CCAC vision building workshops, first and third workshops implemented in each of the two field units, recorded in the workshop setting. The farmer interactions in these workshops were mostly in small groups. The recording captured participants' voices from multiple groups and, as a result, there were frequent voice overlaps. As there was no voice clarity, we found it difficult to identify audio recordings of particular interactions that could be used for the purposes of the research. Therefore, we relied on the observations in our field notes from these workshops.

Data Analysis

I categorized the written and recorded data into baseline, action research, and post-intervention phases. Throughout the data analysis process we masked individual participants' identities as we had assured research participants we would do. Care was

taken to make sure that we did not lose gender-specific information gathered in the research process as one of our interests was to be able to study the differences in the ways in which male and female research participants communicated with each other and with us. Also, I engaged in reflective writing at different points of the study to document my experiences and challenges, and organized the data collected from different research methods. Apart from giving more insights into the topic, this exercise helped me to be more engaged and immersed in the study (Richardson, 1994).

The baseline data included interviews with field facilitators and farmers and notes from our visits to the two field units. My co-researcher and I first listened to the audio recording of each interview at least two times to identify the particular minutes or bytes which were relevant for the study. Later, we listened to the particular bytes several times and transcribed all recorded data for closer scrutiny. Following that, we immersed ourselves into the data by reading it several times to familiarize ourselves with the various ‘speakers’ and the language that they used to express themselves. We then identified the themes emerging from the FFs’ and farmers’ interviews. Also, we reviewed our field notes of visits to the field units to triangulate data and develop a better understanding of the baseline scenario. Following this, I used the baseline data to draft an analytic memo on FFs’ baseline practices and FFs and farmers’ perceptions of their interactions.

The data for action research phase was collected over a period of 12 months. FFs’ documentation of CCAC trainings and meetings were the key data during the action research phase. The data sources included collective planning, peer observations, and collective reflections. FFs of each field unit shared the documentation of CCAC trainings

and meetings with us within a week after the conclusion of each farmer training or meeting. We reviewed the FFs' reports as and when we received them, made notes, and followed up with the FFs on issues that needed clarity. After receiving a few reports, we identified sub-themes emerging from the reports. Similarly, we reviewed the feedback that the FFs collected from the CCAC members and correlated it with data emerging from analysis of FFs' documentation and notes from our visits to the field units. Following this analysis, we mapped multiple sets of data that emerged from the action research intervention to identify sub-themes. Later, we mapped these sub-themes under broad themes and compared them with findings of the baseline scenario. Later, I applied Wenger, Trayner, and Laats (2011) framework on 'value creation in communities and networks' to assess the "immediate", "potential", "applied", and "realized" value of FFs' baseline and action research practices and the impact of those practices on FFs' and farmers' interactions and work with each other. I then used this specific data to draft an analytic memo.

Likewise, we analyzed the post-intervention focus group discussions with FFs and farmers to identify sub-themes. We mapped these sub-themes under broad themes and compared them with findings of the baseline and action research phases. Following this, I looked for trends in participants' responses and experiences across different phases of the study—baseline, action research, and post-intervention. Over time, I drafted several more analytic memos to continue to analyze the data emerging from the study. I periodically shared the findings of my analyses with the field facilitators and sought their perspectives on the emergent findings.

Conclusion

By opting for an action research design that allowed for review and reflection along the way, I deliberately left the ‘door open’ for engagement of field facilitators and farmers as partners in the research. This helped further refine the research design and its implementation in the field. Additionally, it provided an opportunity for the FFs to undertake research to improve their practices and engage farmers to review the relevance of their capacity building inputs. This led to generation of valuable data for the analysis, study, reflection and action. Thus, the action research design was an open invitation to the FFs to become more engaged in the research, while participating in the project.

In the remaining chapters, I present the analysis of the data generated by the study. While the communities of practice provided the theoretical framework, Wenger, Trayner, and Laat’s (2011) framework on ‘value creation in communities and networks’ helped me assess the “immediate”, “potential”, “applied”, and “realized” value of FFs’ community of practice through reviewing multiple sets of data generated by the study to portray a holistic picture of the value that the FFs’ community of practice created for them and for the farmer participants. My use of this analytic framework led to an understanding of how FFs’ new practices influenced the way FFs and farmers worked and communicated with each other. I used the communities of practice theoretical framework to test the working hypothesis in the logic model—when FFs practice/undertake collective practices for planning, observing, reflecting, and documenting, then their communication and work with farmers is improved (see *Appendix A* for dissertation logic model).

CHAPTER 4

FINDINGS

In this chapter, I present the study findings. I begin with a discussion of findings from the baseline data. Later, I discuss Field Facilitators' (FFs) use of collective practices—planning, observing, reflecting, and documenting—in cultivating a community of practice and factors influencing FFs' adoption of the collective practices. Following that, I discuss farmers' and FFs' perceptions on the impact of action research interventions on farmers' ownership of groundwater management and weather monitoring. I follow this with a discussion on farmers' perceptions on facilitation methods used in various trainings. Finally, I discuss other factors influencing farmers' communication and work with FFs and farmers' ownership of groundwater management and weather monitoring.

Findings from Baseline Data

In this section, I present the findings from the baseline data. I have divided the presentation into three sections: (a) FFs and farmers report mutual learning at the beginning of the study, (b) Communication gaps exist between FFs and farmers, and (c) FFs did not use a comprehensive planning and reflection process to avoid communication problems with farmers.

The farmer capacity building activities in the earlier APFAMGS project ended in the first quarter of 2009. Field activities in the SPACC project started in mid-2011. After the start of the SPACC project, field facilitators (some of whom were previous employees of the APFAMGS project while others were new recruits) visited the project habitations

to re-establish rapport with the farmers. The baseline information, which included individual interviews with field facilitators and farmers and me and my co-researcher's field observations, was collected in August and September 2011.

FFs and farmers report mutual learning at the beginning of the study

All farmers interviewed for the baseline from both field units had previously participated in the APFAMGS project and acknowledged the relevance of that project's inputs. Thus, these farmers came into the new SPACC project feeling they had learned much about water resource management from participation in the APFAMGS project and had used that knowledge to regularly monitor water levels in their borewells, calculate total draft and recharge in their HUs, estimate groundwater balance in their HUs for the ensuing season, and used that information to make decisions on which crops to plant. They shared that data collection and analysis had helped them understand groundwater dynamics and that this knowledge had led to more informed decision making on crop choices and crop-water management. They said that they had turned from fatalism—sow after the first rains and pray to the rain god—to pragmatism.

ఉపయోగం ఉంది సార్ మనకి, ఇప్పుడు ఇంతకు ముందు బోర్ వేస్తాంటిమి సార్ బోర్ వేసి ఎంత నీళ్ళు ఉండాయి, ఎందాక వస్తాయని తెలియలేదు. ఈ Field Unit 1 వచ్చినాంక, firstలో Field Unit 1 sir వాళ్ళు వచ్చినారు సార్ ఏదో వస్తాన్నారు ఏమోచెప్తాన్నారు ఏమో పోతాందారు అయ్యో ఇవి అన్ని మనకు అవసరం లేదు అని సార్. ఊర్లో మనకు రాను రాను తెలుసుకునేలా మనకు బుర్ర బాగా పనిచేస్తుంది సార్. బోర్లో ఇప్పుడు రీడింగ్ తీసుకుంటాము, ఎన్ని నీళ్ళువస్తాందాయి, డ్రమ్ము ఎంతసేపులో నిండుతుంది, ఎంత పంట అనేది మనకి రీడింగ్ తీయంగ తీయంగ సార్ ఇంతే పంట పెట్టాల బోర్లో ఇన్నే నీళ్ళు ఉన్నాయి. మనకి informationవస్తాందాది, అర్థమయితాంది, ఎంత పంట పెట్టుకోవాల మనము ...Field Unit 1 చేస్తాండేది మంచిది సార్. రైతు నష్టపోకుండా నీళ్ళు ఉపయోగిస్తాందారు కొంచెం.

-- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

It is useful to us, sir. Earlier we used to switch on the borewell, without knowing how much water was there and for how long the borewell could pump water. At first when sirs from Field Unit 1 visited our villages, we weren't interested in what they were telling us. We assumed that they were visiting the village as part of their job and thought that their suggestions were not relevant. Eventually, we understood and our brains started to work. We now take readings of water levels, and estimate discharge by noting the time taken to fill a (100 litre) drum. By observing and noting the readings over a period of time, we now understand how much crop we should grow. As we are getting more

information, we better understand how much crop we should grow. Field unit 1 is doing useful work, sir. Farmers are using water judiciously and avoiding crop losses.

-- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

ఎట్ల అంటే పంట పెట్టుకుంటాము, మన బోరులో నీళ్ళు ఉండాయని చేసుకుందామని 5 ఎకరాలో, 6 ఎకరాలో మాగాణి కిందనో ఇట్ల ఎక్కువ పంట పెట్టుకొని అది సుమారుగా వర్షాకాలం startingలో sufficient water వస్తాయి మనకు. ఒక 10 రోజులు, 20 రోజులు పోయేటప్పటికి మొత్తం బోర్లు అన్ని ఆడేటప్పటికి మొత్తం నీటి మట్టాలన్నీ పడిపోయి పెట్టినటు వంటి పంటలు 50% కూడా తీసుకోని రోజులు ఉన్నాయి. 25% పంట కూడా మాచేతికి వచ్చిన రోజులు లేవు. దీని వల్ల అరే మన పరిస్థితి ఇట్ల ఉంది అని తెలుసుకోగలుగుతున్నాము. కాబట్టి మనము దాని చేసుకొని తగ్గించి ఆరుతడి పంటలు కాని, లేదా మెట్టపంటలు కింద వ్యవసాయం క్రింద మార్చుకొని వ్యవసాయం సులభ తరమైన పద్ధతులలో నేర్చుకున్నాము

-- Female Farmer Participant, Field Unit 2, September 2011, Baseline interview

At the start of the rainy season, the yield of the borewells is good. Earlier we used to sow crops in 5 or 6 acres of land assuming that there was sufficient water in the borewells for the entire season. After all the borewells in the area started to operate, in 10 or 20 days we used to notice a steep fall in water levels in borewells (borewell yields) and farmers eventually harvested less than 50% of the crop sown area. There were times when we harvested less than 25% of the crop sown area. After this intervention, we have a better understanding of our circumstances. Therefore, we have started to grow irrigated dry crops or dry crops and agriculture has become less stressful.

-- Female Farmer Participant, Field Unit 2, September 2011, Baseline interview

The usefulness and relevance of APFAMGS project inputs was a common theme that emerged from our interviews with male and female farmers from both field units. This was attributed to the timeliness of the inputs, as farmers were experiencing a sense of helplessness because of their inability to comprehend groundwater dynamics and that poor crop-water management led to frequent crop losses. Farmers in both field units acknowledged that they made changes in crop-water management practices. They now monitored groundwater levels, estimated groundwater balance and planned crops accordingly. Also, they now grew irrigated dry crops and were now able to save crops during dry periods. Further, farmers stated that with the use of Participatory Hydrological Monitoring²⁰ (PHM) equipment they were able to estimate the groundwater draft and

²⁰ Participatory Hydrological Monitoring (PHM) involves farmers taking lead in recording geo-hydrological data, interpreting it and using it for judicious management of the groundwater resources. This includes: (a) setting up of observation wells to monitor groundwater levels and measure groundwater discharge, and (b) installation of rain gauge stations to record rainfall.

recharge. Farmers indicated that the tools and methods introduced by FFs helped them have a better understanding of their circumstances.

Farmers admitted that over a period of time their attitudes towards APFAMGS project staff had turned from initial scepticism and indifference to active participation in groundwater management. This indicated that change in farmers' attitudes were a result of sustained engagement by the FFs in both field units during the earlier project. Also, this spoke to those APFAMGS project FFs' commitment and persistence in engaging farmer participants. During our pre-intervention interviews, farmer participants said that they shared their experiences (previous experiences and experiments) during farmer trainings. Their statements indicated good communication between FFs and farmers.

మేము గూడా పంచుకోవడంలో ఉపయోగం ఉంది సార్. వాళ్ళు చెప్పేది అయిపోయినాంక కూడా మళ్ళీ మేము అనుభవాలను పంచుకుంటాం సార్ వాళ్ళు చెప్పినా కూడా వాళ్ళు చెప్పేది కుదరకుండా పోతే మనం కూడా answer ఇస్తాం సార్ వాళ్ళకి. అది సరిపోతుందా లేదా అనేది మేము answer ఇస్తాం. వాళ్ళు చెప్పేదికాకున్నా మనమూ answer ఇస్తాం. -- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

It is useful for us to share as well, sir. After listening to them, we also shared our experiences, sir. If we did not agree with what they say, we told them, sir. We told them what works and what don't. If we don't agree with what they say, we tell them.

-- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

One male farmer participant said that farmers in the APFAMGS project did not hesitate to disagree with field facilitators feeling that it was important for farmers to share their knowledge and experiences. This showed that farmer participants in the previous project were not mere recipients of knowledge. Also, this kind of response indicated that FFs in that earlier project provided opportunities for farmers to share their experiences and knowledge. Female farmer participants also said that they shared their experiences in trainings. The farmer participants' remarks indicated a relatively low power distance between the farmers and the FFs as a result of their participation in the APFAMGS

project. This pointed to a good rapport between the two sets of interactants on which the new SPACC project could build. It is only through questioning and dialogue that knowledge is created and co-created (Freire, 1970).

ఉదాహరణకు ఒకసారి ఏమి జరిగిందంటే జలంబడిలో భాగంగా ఒకసారి నీటి ఆదాపద్ధతులు గురించి చెబుతూ ఉన్నారు. నీళ్ళు ఎట్లా అని చూద్దాం అనిచెప్పి ఒక డేక్నాలో ఒకరోజు ఒక లీటరు నీళ్ళు పోసినా చూస్తే సాయంత్రం అయ్యేసరికి అర్ధలీటరు ఆవిరి అయిపోయింది అర్ధలీటరు మిగిలింది. మరుసటి రోజు 2 లీటర్లు పోసినా, 2 లీటర్లు పోస్తే లీటరు ఆవిరిఅయిపోయింది, లీటరు మిగిలింది. మళ్ళీ రోజు కొంచెం వెడల్పాటిదాంట్లో కాకుండా 5 లీటర్లు పోసినా, 5 లీటర్లు పోసినా గాని, లీటరే ఆవిరి అయ్యింది. 2 లీటర్లు నీళ్ళు పోసిందాట్లో కూడా లీటరు ఆవిరి అయ్యింది. ఇది వెడల్పుగా ఉంది కాబట్టి అర్ధం నీళ్ళు అంటే లీటరు నీళ్ళు ఆవిరి అయిపోయింది. అది కొంచెం విస్తీర్ణం తగ్గింది కాబట్టి తక్కువ నీళ్ళు ఆవిరి అయింది. దీన్ని పొలంబడిలో చెప్పినా.

-- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

For example, once they told us about water saving methods in the Farmer Water School. I wanted to understand evaporation. So, I poured one litre of water in an open pan, by evening I noticed that only half a litre was left and the rest had evaporated. The next day, I poured two litres and noticed that one litre of water had evaporated by sunset. The following day instead of using an open pan, I poured 5 litres of water in a vessel with a small mouth. By the evening, I noticed that only one litre of water had evaporated. Comparing these results, I understood that water stored in wide mouthed containers evaporates quickly. I shared this learning in the Farmer Water School.

-- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

Another remnant from the earlier APFAMGS project was farmer initiative to experiment with new practices. A key principle of the Farmer Water Schools (FWS) implemented during that project is that farmers learn the skill of experimentation. Farmers' confidence to experiment points to a foundation for the development of mass based popular science (Selener, 1997). FFs shared with us that farmers set up experiments and these experiments led to improved understanding and adaptation of knowledge to local needs. FFs who had participated in that earlier project acknowledged that they learned from farmers. This signified mutual learning. One FF, an agriculture graduate, shared that he learned the application of organic practices from the farmers. His statement underscored that formal education doesn't address application aspects which

are critical elements of farmer training. So, field facilitators had a foundation of learning from experienced and innovative farmers when they started the new SPACC project.

రైతుల నుంచి కూడా నేర్చుకున్నాం సార్, ఎందుకంటే మనం చెప్పేది కాదు, వాళ్ళు చేసినప్పుడు దాదాపు ఈ APFAMGSలో అయితే వాళ్ళు కొన్ని కార్యక్రమాలు, Ex: ఇది జరిగింది సార్ FFS రైతు క్షేత్ర పాఠశాల జరిగేటప్పుడు మనము mulching గాని, క్రొత్త, క్రొత్త పద్ధతులను పెట్టినాము. Short term, Long term ఇంకొక తాన మనము వరి పొట్టుతోనే mulching చేయాలంటే చింతపొట్టుతో mulching చేసినాము. అదికూడా saving methodsకాని మనకు తెలియదు. అతను చేసి చూపిచ్చాడు. ఇంకొక అతను ఇంకేమన్నాడు వంకాయ చెట్ల చేసింటే, ఆ అకు అంతా పడింటే నీళ్ళకు అది saving method అలాంటి కొన్ని కొత్త వాటిని కూడా మనం ఒకటి చెబితే agri పరంగా గాని, సెషన్ పరంగా గాని వాళ్ళు ఇంకొకటి ఆలోచించి మనకు చూపించడం కూడా, అది నేర్పించినట్లే.

-- Field Facilitator, Field Unit 2, September 2011, Baseline interview

We also learned from the farmers, sir. Farmers experiment on what we share with them. In some APFAMGS activities, for example in Farmer Field School, we introduced mulching and other water saving methods to farmers by setting up short-term and long-term experiments. At one particular place, we used rice husk as mulch. One farmer experimented with tamarind shells as mulch. Yet another farmer used brinjal leaves as mulch to conserve water. Thus, when we introduced farmers to a new method in agriculture, they further experimented and showed us additional ways of expanding on the practice. We learned these newer techniques from the farmers.

-- Field Facilitator, Field Unit 2, September 2011, Baseline interview

శిక్షణలో మనం వాళ్ళనుంచి కొన్ని నేర్చుకోవడం జరుగుతుంది. వ్యవసాయ పద్ధతులైతేనేమి, sessionలో మనం కొన్ని పెట్టింటాము కాని, వాళ్ళు వాటిని point out చేస్తారు. అప్పుడు మనం కొత్త point గా note చేసుకొని.

-- Field Facilitator, Field Unit 1, August 2011, Baseline interview

In trainings we learned new things related to agriculture from farmers. In sessions we introduced new concepts. They pointed out if it the particular method is not relevant or did not work for them. We noted these things as our learning.

-- Field Facilitator, Field Unit 1, August 2011, Baseline interview

చాలా నేర్చుకున్నాం సార్. సేంద్రీయ ఎరువులు, అవి మాకు పెద్దగా చెప్పరు సార్, ఇక్కడ కాలేజీలో. సేంద్రీయ ఎరువుల వాడకం ఎలా వాడాలని, అవి, చూసిందంటే అక్కడే సార్, Mahabubnagarలో actual use అనేది ఎట్లా ఉంటుందనేది field experienceలో తెలుసుకున్నాను వాళ్ళ ద్వారా.

-- Field Facilitator, Field Unit 2, September 2011, Baseline interview

We learnt several things sir. They don't teach us much about organic practices in the college. During field visits, I observed and learnt the application of organic manures at Mahabubnagar, sir.

-- Field Facilitator, Field Unit 2, September 2011, Baseline interview

Thus, in our baseline discussions with farmer participants from both field units, it appeared that those who had participated in the previous APFAMGS project began the SPACC project already valuing interactions with the FFs. Additionally, elements of mutual learning appeared to be present at the start of SPACC and at the beginning of the

study and were acknowledged by both sets of interactants. These comments demonstrated that the earlier APFAMGS project had set an atmosphere where FFs were open to “dialogue” to seek outside perspectives, which resulted in improved knowledge and skills for both farmers and FFs. One can characterize these two sets of interactants as trainer-participants and participant-trainers (Freire, 1970). This facilitated mutual respect between the two sets of interactants and reinforced the principle of participatory learning as defined by Maguire (1987)—“we both know something; neither of us knows everything. Working together, we will know more, and we will both learn more about how to know.” (Selener, 1997, p. 36).

Even though both farmers and FFs were positive about their communications and working relationships carrying over from the earlier project at the beginning of the SPACC project, my co-researcher, FFs and I discovered, in our visits to project sites and interactions with farmer participants that there were lapses in the groundwater management practices farmers had implemented during the previous project.

Communication gaps exist between FFs and Farmers

One reason for the lapses in practice mentioned above was the lack of follow-up with farmers that occurred during the gap between the end of the APFAMGS project and the beginning of SPACC. For example, during the initial visits that the SPACC FFs made to project sites to re-establish rapport with farmers who had participated in APFAMGS, FFs in both field units discovered that farmers were not collecting borewell data from observation wells. Our baseline interviews with farmers also confirmed this change in practice:

For example, ఒక ప్రాజెక్టు గ్రామంలో 3 పరిశీలనా బోరుబావులు ఉన్నాయి. ఇప్పుడికి వస్తే 3 డేటా రావడంలేదు. వాళ్ళతో నేను, GMCతో, interact అయినాను. ఎట్లా, ఏమి అంటే, ఈ మధ్యలో కొంచెం gap వచ్చింది సార్! మాకు నీళ్ళు కొంచెం లోపలికి పోవడం, అందువలన తీయలేక పోయినాము.

అంటే ఇంతకుముందు బాగా జరుగుతావున్నది వాళ్ళంతకు వాళ్ళు జరుపుకోవల్సింది అక్కడ మధ్యలో కొద్దిగా gap వచ్చి అక్కడ వర్షపాతకేంద్రం డిస్సర్బ్ కావడం, so మనం వెళ్తానే వాళ్ళు కొంచెం respond అయి అప్పటికప్పుడు వాళ్ళే తీర్మానం చేసుకొని. ఇది బాగు చేసుకుంటే బాగుంటుంది, ఇంకా కొనసాగింపు ఉంటుందని చెప్పి అది నాకు కొంచెం సంతోషకరం అయింది. -- Field Facilitator, Field Unit 1, August 2011, Baseline interview

For example, in one particular project habitation there are three observation wells. Presently, we are not getting data from any of the three. I inquired with the GMC members to find out the causes. They told me that there was a gap in between. Also, the water levels fell and therefore they (farmer volunteers) could not measure the water levels.

Earlier data collection went very well. Later, they (GMCs) were to take the responsibility of data collection. There was a gap in between. After I went, they immediately passed a resolution to repair the borewells. Also, I told them that it would be helpful if they could repair the borewells as that the project would continue. I was pleased with their positive response.

-- Field Facilitator, Field Unit 1, August 2011, Baseline interview

Farmers of both field units shared that technical issues such as inability to reinsert HDPE pipes that were removed to deepen borewells and rusting of the borewell cap that holds the main tube and the HDPE pipe affected data collection in the transition period between the APFAMGS and SPACC projects.

మధ్యలో 1½ year gap రావడం వలన, ఈ డేటా, పైపులు గాని కొంచెం disturb కొంచెం light గా అయినట్లు ఉంది. అయిందికూడా. -- Field Facilitator, Field Unit 1, August 2011, Baseline interview

In between there was gap of one and half years. Therefore, the pipes got disturbed slightly and data collection also was affected. -- Field Facilitator, Field Unit 1, August 2011, Baseline interview

డేటా collection లో మీరు ఎదుర్కొంటున్న ప్రధాన సమస్యలు ఏమైనా ఉన్నాయా? -- Researcher

సాంకేతికంగా కొన్ని మోటారు పెరికినప్పుడు ఆ పైపులు దిగక పోవడము కొన్ని సమస్యలు సార్!

-- Male farmer, Field Unit 1, August 2011, Baseline interview

Are you experiencing any problems in data collection? -- Researcher

Technically whenever we remove the motor, we have problems with reinserting the pipes (HDPE pipes used to insert the probe for measuring water levels).

-- Male farmer, Field Unit 1, August 2011, Baseline interview

మీరు ఇప్పుడు ఈ డేటా తీయడానికి ఎదుర్కొంటున్న ప్రధాన సమస్యలు ఏంటేంటి? -- Researcher

సమస్య అంటే కొన్ని ఈ పరిశీలనా బోరుబావులలో అప్పుడు మీరు దించినేటియే మామూలుగా ఇవి ఉన్నాయి గదా పైపులు దించేడానికి డమ్మీలు, ఆ డమ్మీలు శిలుము పట్టి పోవడం, తరువాత బోర్లు కాలిపోయినప్పుడు motors బయటికి పెరికేయడం, motor కాలిపోయినప్పుడు దాని వల్ల డమ్మీలు బిగీయడానికి అవి చిలుము బట్టి పనికిరాకుండా పోవడంతో మళ్ళా మీరు next budgetలేక పోవడంతో ఆగిపోవడం ఈ ప్రాజెక్టు లేని దానందువల్ల వాళ్ళ వెళ్ళి తీసుకొనేడానికి, ఆ పైపులు బిగీక కొన్ని సమస్యలు అందువల్ల తీయడంలేదు.

-- Male farmer, Field Unit 2, September 2011, Baseline interview

What are the major problems in data collection?

-- Researcher

In some of the observation wells, the dummy that holds the HDPE pipe has become rusty and broken down. This affected the re-insertion of HDPE pipes when they were removed to repair the borewell motor. The project came to a stop and we did not have the budget to repair and re-insert the HDPE pipes. This affected data collection. -- Male farmer, Field Unit 2, September 2011, Baseline interview

Farmer participants in both field units shared that their borewells went dry. So, they resorted to either deepening their existing borewells or drilling new ones in their farming plot with the hope of accessing additional water. Both field unit areas experienced drought²¹ followed by erratic rainfall in the years 2008 to 2011. During periods of scanty rainfall, farmers pumped more water from their borewells to save standing crop or hoping for good rains in the near future. As discharge of borewells exceeded recharge, several of the borewells went dry. Farmer participants from Field Unit 1 shared that APFAMGS farmer participants initially restrained themselves from further drilling. However, they relented, observing the success of other farmers in finding water at greater depths.

“బ్రతకలేక బ్రతుకుదెరువు లేక తెలిసి తప్పు చేస్తున్నాము.” ఇక్కడ కమిటీని ఏర్పరుచుకున్నాము. దానికి కొన్ని నియమ నిబంధనాలు పెట్టుకున్నాము. కొంత కాలం వేచి చూచినాము. బోర్లు వేయకూడదు అనుకున్నాము. 500కంటే మించి వేయకూడదు అనుకున్నాము. ఈ సన్నకారు చిన్నకారు రైతులకి నీళ్ళు విడిసి పంట చేయడానికి, నీళ్ళు ఇడిస్తే వేరే మార్గంలేదు. ఇప్పుడు ఇట్లానే కూలికి వెళ్ళలేరు ఇట్లానే వేరే ఎక్కువ amount ఉంటే ఏదో పెట్టుబడులు పెట్టి ఏదో వ్యాపారమో business చేసు కోగలదు. ఈ మధ్యరకం small farmers వాళ్ళు ఇట్లా వాళ్ళంతా కూడా ఇంకా కొన్ని దినాలు వేచి చూసేది. ఓరే సన్నగా అంతలావు నీళ్ళు వస్తే ఏదో రెండు సీమ అవులు పెట్టుకుంటే పొద్దుపోతుందని యోచన.

²¹ Rainfall data collected by farmers and analyzed by the SPACC project revealed that Field Unit 1 experienced extreme drought (40% to 50% deficit rainfall from normal) in the year 2008-09 and erratic rainfall in 2009-10 and 2010-11. Field Unit 2 experienced moderate drought (25% to 35% deficit rainfall from normal) in the year 2009-10 and erratic rainfall in 2010-11.

ప్యే, నేనే దాదాపు ఒక సంవత్సరం నీళ్ళు లేకుండా ఉండిపోయాను. ఒక సంవత్సరం ఉండిపోయాను. మనమే తెలిసి తప్పు చేయకూడదు. లోతుకు వెళ్ళకూడదు, 400 వేసినాను నేను ఇంకా వేయకూడదు అని చెప్పి, నేను ఒక సంవత్సరం ఉన్నా. తరువాత నాకి బ్రతుకుదెరువు లేకుండా పోయింది. ఏం నేను వేరే కూలికి వెళ్ళి చేసే శక్తి, ఒపిక లేవు. సరే, వేరే వ్యాపారం ఏమన్నా చేసుకుందాం అంటే పెట్టుబడి పెట్టే దానికి డబ్బులు లేదు. అలాంటప్పుడు ఏమి చేశినా, మళ్ళీ నేనే తప్పు చేసినా 840 అడుగులు తోలినా.

అయితేను ఏదో ఇంచి, 2 ఇంచులు పడతాయని ఆశ ప్రతి ఒక్కరిలో కూడా. ఒక 2 కైలు కనువు వేసుకుంటే 2 సీమ అవులు మేపుకుంటేదాని పాలు వేసుకుంటే 15 దినాలుకు బిల్లు వస్తుంది అని ఇట్లాంటివి ఈ టమాటలు ఒక్కొక్కసారి అందరు సాలిచ్చినప్పుడు రేట్లు వస్తాయి. 40 రూపాయిలు అంటారు. ఓరే, నేను బోరు వేయని దానివలన మోసపోతినే, ప్సే! -- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

With the lack of livelihood opportunities and inability to make a living, we committed mistakes knowingly. We had formed a committee and established rules and norms. We decided to not drill borewells. We waited for a while. We decided not to drill beyond 500 meters. For small and marginal farmers, it is difficult to raise crops without water. Their options are very limited without water. They cannot work for daily wages, nor do they have money to invest and start a business. These small farmers usually wait for water in the hope that if their borewell yields water, they can keep two cows and make a living.

I, too, waited for a year without water (when my borewell went dry). I told myself that I cannot knowingly commit a mistake (drill further). I told myself that I cannot drill further as I had already drilled up to 400 feet. I waited for a year. I did not have any livelihood options. I don't have the strength to work as a daily labourer. I did not have the money to invest and start a new business. In those circumstances, I deliberately committed a mistake and drilled the borewell to a depth of 840 feet.

The hope everyone has is that if the borewell could yield at least two inches of water, one could grow some fodder and feed two cows. This way, we could get some money every fifteen days. Similarly, the price of tomato goes up to Rs. 40, when there is no produce in the market. Then a farmer feels that he made a mistake by not drilling further to secure water to raise tomato.

-- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

సార్, ఇటువంటి విషయాలను సమస్యలను సంఘం, మన కమిటీలో కూడా అన్నీ చర్చిస్తా ఉన్నాం. వాళ్ళకు అవగాహన కల్పిస్తాఉన్నాం. వేరే సాధారణ రైతులకు అవగాహన లేనోళ్ళకి మనం మా కమిటీ తరుపున మా GMC తరుపున వాళ్ళకి అవగాహన పూర్తిగా 100%లో 75% మేము వాళ్ళకి విశదీకరంగా వాళ్ళకి ఈ మా భాషలో తెలిసే విధంగా పూర్తి అవగాహన కల్పిస్తా ఉన్నా కూడా ఈ వర్షం లేని పరిస్థితుల్లో వాళ్ళకు తెలిసినాకూడా విధిలేని పరిస్థితులలో కొందరు పోతా ఉన్నారు. ఎంత మేము చెప్పినా ఎంత అవగాహన కల్పించినా కూడా పోతా ఉన్నారు వాళ్ళను ఉదాహరణగా తీసుకొని మనకాడ కూడా కొందరు ఉరికేవాంతోన్న మళ్ళా పరిగెత్తే, వెనుకంటి ఉండేదెందుకు వీళ్ళకూడా పోయేదానికి ఆస్కారం ఉంది. ఇది దీనికంతా పరిస్థితే సార్, వర్షాభావ పరిస్థితి ఒక్కటే ఎక్కడ కూడా వేరే మార్గాలు ఇండస్ట్రీలు లేవు ఇంక వేరే విధానం ఏదీలేదు. -- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

Sir, we have discussed these things in our committee. We discuss all these issues in our committee. Through our GMC, we work towards creating more awareness amongst farmers. We put in a lot of effort to increase awareness of lay farmers, by simplifying the content and in a language that is understandable to all. Despite our efforts and increased farmer awareness, in these drought situations farmers resort to further drilling of borewells. They do so believing that it is important to keep pace with the person who is ahead, so that they do not fall behind; farmers resort to further drilling of borewells. The reason for all this is the drought situation, farmers do not have other options and there are no industries. -- Male Farmer Participant, Field Unit 1, August 2011, Baseline interview

Farmer participants in Field Unit 1 shared that the inability of APFAMGS farmer institutions (GMCs and HUNs) to act as a pressure group to enforce collective norms at the village or HU level to deter farmers from further drilling of borewells or abide by crop plans finalized in the crop-water budgeting exercise, eventually led to further drilling of borewells. When probed on why farmer institutions failed in their efforts to curb individual farmers from drilling further, the farmer participants got exasperated.

అంటే చర్చించాము సార్! ఎందుకు చర్చించలేదు, ఇప్పుడుగాని సంఘాలు జరుగుతానే ఉండాయి. ఆ సంఘంలోనుంచినే అన్ని పనులు ఏర్పాటు చేసుకోవాడానికి వాళ్ళు అనుకుంటూ ఉండారు. ఇప్పుడుగాని సంఘాలు జరుగుతానే ఉండాయి సార్! అయినా వాళ్ళు కొందరైతే వేసి వేసి నీళ్ళు ఎన్ని అడుగులు తోడినా భూగర్భజలాల్లో నీళ్ళు లేవు అనుకొని తీర్మానించుకొని కొందరైతే తోలరు. కొందరైతే ఉంటారు గదా సార్! వాళ్ళయితే ఎవరిమాట వినరు.

-- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

అట్లాంటి వాళ్ళ గురించి మీ సంఘంలో ఎప్పుడైనా చర్చించారా? -- Researcher

వాళ్ళ సంఘంలోకి కూడా రారుసార్! అప్పుడేం సార్ చేసేది. సంఘంలోనికి రమ్మన్నకూడా రారు.

-- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

మీరు సంఘం తరుపున మీరు ఆపుడేమి మాట్లాడలేదా? ఇటువంటి విషయాలు. -- Researcher

ఇప్పుడు మనం మాట్లాడుకున్నా కూడా నీవు తోలదబ్బా! 900 అడుగులు తోలద్దంటే మా మాట వినే పరిస్థితిలో ఉంటారా సార్!

-- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

...

మన సంఘాల్లో ఉండేవాళ్ళ మాత్రం పాటిస్తారు. సంఘాల్లో లేనివారిది మీరు కమిటి ద్వారా ఏమి ఎప్పుడు మాట్లాడలేదా? మేం పోదాం సార్, ఇప్పుడు కావలసింటే వాళ్ళ ఇంటికి పిలుచుకొని పోదాం పదండి వాళ్ళగాని మేము చెప్పినమాట వింటే అప్పుడు అడగండి, అట్లా తప్పుడు ఏం సార్ చేసేది మేమన్నా ఆఫీసర్లా (Ha) ఏమన్నా వాళ్ళ ఏమన్నా చెప్తే వాళ్ళ వింటారా అట్లా వాళ్ళు అయినారు. -- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

We did discuss this sir. Who said that we didn't discuss, the (farmer) groups (GMCs and HUNs) are functioning even now. We plan to do all our work through the groups. Even now the groups are functioning, sir. Some farmers, after having drilled borewells in search of water, have now resolved not to drill further. However, there are always those who don't listen to anyone. Farmer Participant

-- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

Have you discussed those farmers in your groups? -- Researcher

They don't attend our group meetings, sir. What can we do about them, sir? Even if we ask them to join our group, they will not.

-- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

Have you discussed in your groups what to do in those circumstances? -- Researcher

Even if we discuss and tell those farmers not to drill beyond 900 feet, they are not willing to listen to us, sir. -- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

...

Do our committee members follow-up with those farmers who are not members of our group? Let us go to their house now, sir. I will take you to their homes; you can ask see for yourself that they won't listen to us. What can we do in those circumstances, are we officers, ha ha...? Do you think they will listen to our advice?

-- Female Farmer Participant, Field Unit 1, August 2011, Baseline interview

The groundwater situation in Field Unit 2 was not as adverse as in Field Unit 1.

However, in Field Unit 2 as well farmers had either deepened or drilled new wells to cope with water shortages during the cropping season. Aside from inability to act as a pressure group to restrain other farmers in their habitations from further drilling of borewells, it appeared that the farmer groups in both field units did not take the initiative to resolve the technical issues around data collection.

ఈ సమస్యలను మీ యొక్క అంటే గ్రామస్థాయి GMC కమిటీలోగాని, పరివాహక ప్రాంత స్థాయిలోని HUNలో చర్చించారా? -- Researcher

చర్చించినాం సార్, ఇది వరకు ఖర్చుతో కూడికొన్న సమస్య అని అట్లే అనుకున్నాము (అట్లే పెట్టినాము).

-- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

Have you discussed this problem in your habitation level GMC or in the Hydrological Unit Network (HUN)? -- Researcher

We discussed it, sir. We decided to address it later as it involves considerable expenditure.

-- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

ఈ సమస్యలను, అన్నా, మీ గ్రామంలో నున్నటువంటి GMC గావాచ్చు, మీ పరివాహక ప్రాంతంలో HUN కమిటీలో చర్చించారా? -- Researcher

ఒకసారి HUN కమిటీలో గూడ చర్చించినాం సార్, అంటే budget లేదని, సరే budget వచ్చినప్పుడు తెప్పిస్తామని చెప్పినారు. మినిట్స్లో కూడా రాసినాం ఫలానా తేదీలో చర్చించినాం.

-- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

ఈ సమస్య పరిష్కారానికి ఏదైనా ప్రణాళిక చేసుకున్నారా? -- Researcher

అంటే HUN కమిటీలో ప్రణాళిక అంటేసార్ మామూలుగా next వచ్చినప్పుడు ఆ డమ్మీలు బిగించి ఎవరన్నా బిగీకుండా ఉన్న రైతులదగ్గరకైనా పోయి వాళ్ళ పొలాల్లో తీసేసి పైపులు పక్కన ఏసినేవి గూడ మళ్ళీ లోపల దించాలనుకున్నాము సరే అని మామూలుగా అందరు HUN కమిటీలో చర్చించుకొన్నాము.

-- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

Have you discussed this problem in your habitation level GMC or in the Hydrological Unit Network (HUN)? -- Researcher

We discussed it once in our HUN committee, sir. We decided to address it later as we do not have the budget for it. -- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

Have you made any plans to address the problem? -- Researcher

We decided that after we get the funds we will repair those observation borewells that need to be repaired, i.e. put new dummy rings and re-insert the HDPE pipes.

-- Male Farmer Participant, Field Unit 2, September 2011, Baseline interview

Farmer institutions did not take the initiative to approach the project's local field unit to resolve the technical issues. These problems surfaced only when the field facilitators inquired about the lapses in data collection. This poses larger questions of relevance of data collected and ownership of the process. When I probed this in my discussions with the farmers during my visits in September 2011, farmers in Field Unit 2 shared that they were no longer monitoring water levels in their borewells as they had an approximate idea about the water levels. Also, they said that it was not required to monitor borewells on a fortnightly basis as the water levels did not vary in such a short span. This latter comment was not valid, as water levels are dependent on discharge and recharge in the hydrological unit and can fluctuate rapidly if either of these occurs at a faster pace than the other. The FFs who accompanied me on that visit were surprised by the farmers' response.

For example ఈ రోజు అనుకోండి వాళ్ళు data డేటా తీయడంలేదు అటువంటివి జరిగినప్పుడు మీరు ఎలా రియాక్ట్ అవుతారు? -- Researcher

అక్కడ జరిగిన సన్నివేశం అయితే ఈ రోజు మాకు కొంచెం బాధ అనిపించింది సార్ అక్కడ. ఎందుకంటే అతను actual గా చెప్పినారు మాకు phone చేసి. Actualగా మేము చూడడం లేదు ఇప్పుడు. ఎందుకంటే, వాళ్ళే పర్యవేక్షణ చేస్తాన్నారు, తీస్తున్నారు. Data వాళ్ళు చెబితే మేము వినేవాళ్ళం, data తీసుకునే వాళ్ళం. వాళ్ళ దగ్గరనుంచే data అడిగేవాళ్ళము. మా దగ్గర జరిగిన పొరపాటు ఏమైంది అంటే, మన బ్రహ్మయ్య ఏమి చేశాడంటే, ఇంతకు ముందు అంతా data తీసే వాళ్ళము. ఇప్పుడు తీయడంలేదు. అవును సార్! మాకు తెలుసు కాబట్టి కొలతలు తీయక పోయినా కూడా అందాజుగా చెబుతున్నాం సార్! ఇంతకు ముందు అయితే మనమే పోయి కొలిచి తెచ్చే వాళ్ళం అన్నమాట. వాళ్ళకు కార్యక్రమం

అప్పగించిన తరువాత తీపించేవాళ్ళం. అదే అలవాటుపడి తీస్తారులే అని అనుకుంటూ ఉండాము మనము. కొన్ని చోట్ల problems వస్తూ ఉన్నాయి. Dummyలు లేవు, pipeలు లేవు అక్కడ starting level నీటిమట్టం మాత్రం తీస్తున్నారు.

-- Field Facilitator, Field Unit 2, September 2011, Baseline interview

For example, today we realized that they are not collecting data, how do you respond to such situations? -- Researcher

We are a little upset with what happened today. They shared the data with us by phone. We are not monitoring the collection of data. They are collecting the data on their own. We are noting down the data that they are sharing. We only request them to share the data. The mistake on our part is that we did not verify the data they shared. The person who used to collect data earlier is not collecting it. He says, "Yes sir, we know the water levels. So, we are not measuring them anymore. We are telling you an approximate measurement." Earlier we used to measure data on our own. After we handed over the program to them (HUNs and GMCs), we used to monitor data collection. We assumed that it will become a habit and they will continue the data collection. There are problems in a few habitations. The HDPE pipes and dummy for inserting them are not in place. In those places, only the static water level (SWL) is being measured.

-- Field Facilitator, Field Unit 2, September 2011, Baseline interview

Another reason for lapses in farmers' data collection emerged when I asked the FFs in Field Unit 2 if this indicated that farmers did not "value" the data. FFs shared with me that they had cited examples of institutional purchases of farmer-collected data to motivate farmers to collect data in the APFAMGS project. Such purchases had taken place in specific hydrological units, in other field units which were not part of this study, in which certain research institutes had particular interest. The institutions directly purchased the data from the local Hydrological Unit Networks (HUNs). Though the project facilitated this linkage, it did not commit to facilitating such market linkages for farmer collected data in all HUs. The PHM concept in the APFAMGS project was based on the principle that farmers would voluntarily collect data on water levels in their borewells and rainfall in their hydrological unit as it was useful for them to make informed decisions on crop-water management and crop planning.

Actual గా మనం ఏమని చెప్పినామంటే ఈ data తీస్తే మీకు ఎంతో ఉపయోగపడుతుంది ఎప్పుడో ఒకసారి దీన్ని కొనుగోలు జేయడం జరుగుతుంది దీన్ని నాణ్యత బట్టి ఏదో ఒక సంస్థ కొనుక్కొంటుంది అని చెప్పినామన్నమాట. అది అడుగుతావుంటారు అవుడవుడు. ఈ data కొనుక్కుంటా అంటారు. 5, 6 సంవత్సరాలు అయితావుంది. మాకుదీన్ని అడిగే వాళ్ళేలేరు, తీసుకునేవాళ్ళేలేరు. మాకేంటి ఉపయోగం. మాకు తెలుసుకదా ఎంత మాత్రం ఉంటుందో మాకు తెలుస్తా

ఉంటాది. ఇన్ని రోజుల నుంచి కొలుస్తూ ఉండాం మాకు తెలీదా అది ఎంత అని. మీ కోసం మీకు ఉపయోగపడుతాంది కాబట్టి తీసుకొని పోతావుండారు. అనే feel అవుతావున్నారు. వాళ్ళతో interact అయినప్పుడు తెలుసుకున్న విషయాలు. కాని, మనం అందరితో ప్రాజెక్టు గురించి చెప్పుకోము అనమాట మనము. Just మీతో పంచుకొంటున్నామన్నమాట.

-- Field Facilitator, Field Unit 2, September 2011, Baseline interview

Actually what we told them was that this data will be very useful to you. Further, if the data is qualitatively good, some agency may purchase it in the future. The farmers kept inquiring of us when the data will be purchased. They say 5 to 6 years have passed and no one has purchased the data. What is the use of this data to us? In informal interactions the farmers say, “after these many years of measuring the water levels, don’t we know the water levels in our borewells? You need the data and it is useful to you. Therefore, you are taking the data.” We don’t share this with others in the project, we sharing this only with you. -- Field Facilitator, Field Unit 2, September 2011, Baseline interview

FFs in Field Unit 2 admitted that use of the motivation strategy that ‘farmer-collected data had a market value’ was a wrong one to be used. They shared that farmers were disappointed as their groups did not receive any financial returns on the data collected. As a result of this miscommunication, farmers seemed to perceive that regular data collection was more relevant for the project management than to monitor water levels in their borewells for effective crop planning and groundwater management. This points to lack of effective dialogue amongst FFs within the Field Unit 2 and between FFs and project management in communicating to farmers the usefulness of PHM data, a key principle of community of practice. This lack of effective dialogue within the Field Unit 2 and between the field unit and project management led to use of a motivational strategy that may have been effective in the short term, but undermined farmer interest in the longer term.

When I asked FFs in both field units for strategies to reinvigorate farmers’ interest in data collection, they opined that providing material or financial incentives to farmer participants would improve their commitment and ensure greater consistency in data collection and participation in project activities. However, providing incentives for data collection was not in consonance with the objectives of either the APFAMGS or SPACC

projects. As mentioned earlier, both projects experimented with the idea of farmers' voluntarily collecting data to make informed decisions on their crops.

Data monitoring farmer కు కొంత ఏదైనా benefits ఇచ్చినట్లయితే! Actual గా వాళ్ళకు ఉపయోకరమే ఈ data అని చెప్పి. మాకతెలుసులే అంటారు, అన్నమాట. వాళ్ళకు మనం ఒక ఏదైనా honorarium/గౌరవ వేతనం మాదిరిగా ఏర్పాటుచేస్తే compulsoryగా తీస్తారు. గౌరవవేతనం లాగా ఏదైనా కొంత ఇస్తే బాగుంటుందని నేను అనుకుంటాను. అప్పుడు బాధ్యత పెంచవచ్చు వాళ్ళది. మనకు compulsoryగా తీస్తారు అప్పుడు కాని. అది మనకు possible కాదు అని తెలుసు. వాళ్ళ ఉద్దేశ్యం అదేనన్నమాట.

-- Field facilitator, Field Unit 2, September 2011, Baseline interview

It will be helpful if we can give some incentives to the data collection farmer volunteer. We did tell them that this data is useful to them. They say, "Yes, we know." If we were to give them some honorarium, they will collect the data regularly. We believe it would very helpful if could compensate them by paying an honorarium or provide other incentives. Then the farmers will show more responsibility in data collection. They will definitely do it on a regular basis. I know that it is not possible in our project. However, farmers expect this.

-- Field facilitator, Field Unit 2, September 2011, Baseline interview

వాళ్ళ ఏమైనా problem ఉన్నప్పుడు మనకు ఏదైనా 1 or 2 వాళ్ళకు positive గా దానికి సంబంధించిన ప్రభుత్వ, ప్రభుత్వేతర ద్వారా కావచ్చు వాళ్ళకు ఏమైనా మనం సహాయం తీసుకెళ్ళినప్పుడు వాళ్ళు automaticగా మనవైపు మన మాట వింటారు.

-- Field facilitator, Field Unit 1, August 2011, Baseline interview

If we were to respond to them whenever they have a problem, by facilitating the necessary linkages with the government or related agencies, they will show more interest in our activities and listen to our messages.

-- Field facilitator, Field Unit 1, August 2011, Baseline interview

From the above quotes one can surmise that FFs did not concur with the project's objective of farmer volunteerism in groundwater management. Rather than sustaining farmers' interest in data collection through "dialogue" that focused on the relevance of data to farmers in crop-water management and the importance of institutional monitoring of data collection, FFs believed that financial or material incentives could improve farmer motivation in data collection. This further supports the finding that the dialogue amongst FFs within each field unit and between the field units and project management needed to be improved to identify effective strategies to improve farmer participation and ownership of data collection.

To conclude, in the pre-intervention interviews, FFs stated that they had good rapport with farmer participants in the previous project. Farmer participants also acknowledged that they had opportunities under APFAMGS to share their experiences in trainings and exchanges with field facilitators. The statements of both sets of interactants interviewed during this part of the research indicated that mutual learning existed between FFs and farmers. Also, FFs did not identify any challenges nor did farmers share any concerns in response to specific questions on challenges to facilitation. However, our field visit observations and follow-up discussions with farmers and field facilitators revealed that farmers' interest in data collection was declining. Also, farmer institutions were observed as being passive in addressing maintenance issues of data collection equipment and deepening of wells in their hydrological units. Further, there was a need to improve dialogue amongst FFs within in each field unit and between field units and project management to identify effective strategies to improve farmer ownership of groundwater management.

FFs Did Not Use a Comprehensive Planning and Reflection Process

Collective Planning

Analysis of the baseline data indicated that all FFs in the project field units under study participated in monthly review and planning meetings where their field unit team prepared monthly action plans collectively. Climate Change Adaptation Committee (CCAC) meetings and farmer trainings were then scheduled and carried out on the basis of the monthly action plans. The plan for the current month was laid out in a tabular format that indicated: date, place, activity, and person responsible. Plans did not mention

objectives and agenda of the proposed activity; roles and responsibilities; assistance required; and strategies for effective implementation, if any. Also, the FFs reported that their collective planning deliberations did not include discussions about experiences of the previous visit; past challenges, issues and constraints; lessons learned from previous visits; and strategies for effective implementation of planned activities.

నెలకు ఒకసారి మీటింగ్ జరిపించారు. మీటింగు నిర్వహించేటప్పుడు గత నెలలో ఏమి సాధించాము ఏమి backlogs ఉన్నాయి, వాటికి follow-up actionకు సంబంధించిన plan కూడా ఉన్నట్లు లేదు. Activities అమలుపరుస్తున్న క్రమంలో ఏమైనా సందేహాలువస్తే, వాటిని నివృత్తి చేయడానికి సిబ్బందితో మరలా మధ్యలో సమావేశ నిర్వహించడం, వాటి పరిష్కారాలను అన్వేషించడం వంటి ప్రక్రియ జరిగినట్లు reportలో ఎక్కడా కనిపించడం లేదు.

-- Researcher's notes from FFs Reflection Exercises, September 2011, Field Units 1 and 2

A meeting was held once a month. In the meeting minutes, it is not clear whether the discussions included the topics of achievements, backlogs, and follow-up plans. How were challenges in implementation resolved? It is not clear from the reports if any interim meetings were conducted to help FFs resolve emerging issues or develop strategies to overcome challenges.

-- Researcher's notes from FFs Reflection Exercises, September 2011, Field Units 1 and 2

FFs did not engage in collective planning for individual training events. Aside from that, developing a training plan was not a regular practice prior to the action research intervention. During the baseline interviews, FFs reported that training plans were designed only for large farmer trainings or meetings, such as a crop-water budgeting workshop²² and Farmer Field Days²³.

Professionals ప్రణాళిక చేసేవారు. FO approve చేసేవారు. అందరితో పంచుకొనే వారు. Professionalsకు material preparation బాధ్యత ఉండేది.

-- Field Facilitator, September 2011, Field Unit 2, Baseline interview

²² Crop-Water Budgeting (CWB) workshop is undertaken at the end of each cropping season. The CWB exercise involves estimation of the groundwater balance based on the total recharge and draft for the particular monsoon season. This estimation helps farmers make informed decisions on the crops to be sown for the coming season.

²³ A Farmer Field Day marks the completion of the FWS training cycle. A graduation ceremony is organized to honor the FWS graduates. During the graduation ceremony, graduates showcase their experiences and learning from participation in FWS to members of their community. Farmer institutions take lead in organizing and conducting the Field Day. Government officials and people's representatives are invited. The Field Day gives these farmer institutions greater visibility and provides them a platform to emerge as a critical pressure group on groundwater management in the district.

The concerned professional prepared the training design. The Field Officer reviewed and approved the training designs. It was shared with all FFs. Preparing the training materials was the responsibility of the professionals. -- Field Facilitator, September 2011, Field Unit 2, Baseline interview

In the APFAMGS project, training plans were developed either by the Professional – Land and Water Management (P-LWM) or the Professional – Non-Formal Education (P-NFE). They were relatively more qualified than the Village Coordinators (VCs) in terms of experience or technical qualifications. Care was taken to ensure that the training plans were in accordance with guidelines of Project Management Office. Thus, developing a training plan was more an individual exercise and often did not have inputs from rest of the FFs. The responsibility of the remaining FFs in the field unit was primarily to mobilize farmers for the event. The Field Officer (FO) reviewed the training plan prepared by the professional/s (i.e. P-LWM and P-NFE) and approved it. After the FO's approval, the remaining members of the team were provided a copy of the plan. Preparation of training materials was also the responsibility of the professionals. Further, responsibility to facilitate the training was confined to relatively senior and more technically qualified members of the team. The role of the remaining FFs was confined to mobilizing farmers for the training. I hypothesize that such non-inclusive practices could have been burdensome for a few and led to hierarchical relationships within the team, wherein each individual carried out the task assigned to him/her. Unwittingly, such practices could have undermined teamwork and the development of a community of practice. Additionally, restricting development of training materials and facilitation to senior and relatively more qualified staff could not have contributed to capacity building of other team members.

Observing Facilitation

A review of the baseline data indicated that prior to the action research intervention, an observation checklist was used only in Farmer Water School (FWS) sessions, not in CCAC training or meetings. This checklist was used to record observations on facilitation and provide feedback to the facilitators. It was similar to the one used by the FFs participating in the action research.

Observation check list కేవలం FWSలో వాడే వాళ్ళం.

-- Field Facilitator, Field Unit 1, Focus Group Discussion, October 2012, Post-intervention

We used to use observation checklist only in FWS.

-- Field Facilitator, Field Unit 1, Focus Group Discussion, October 2012, Post-intervention

Prior to the action research, it appeared that peer-to-peer feedback was non-existent. Given that only P-LWM and P-NFE facilitated trainings, it may not have been convenient and or culturally appropriate for the remaining colleagues, i.e. VCs, to provide feedback to them. VCs may have perceived giving feedback to a senior and technically more qualified colleague as a positive face threatening act (Brown & Levinson, 1987). This could be because of relatively large power distance between the two sets of colleagues (Hofstede & Hofstede, 2005). Consequently “dialogue” on ways of improving facilitation and training was not an established practiced.

Reflecting on Farmer Trainings

Before the action research intervention, FFs were not in the habit of reflecting on every training, and even then, they only reviewed logistics and implementation, unless there was a major problem.

ఎప్పుడైనా పెద్ద సమస్యలు ఎదురైనప్పుడు చేసేవాళ్ళం. నెలకొకసారి అని కార్యక్రమాలపై review చేసేవాళ్ళం.

-- Field Facilitator, Field Unit 1, September 2011, Baseline interview

A monthly review of all activities was conducted. Alternatively, we reflected only when we encountered a major problem.

-- Field Facilitator, Field Unit 1, September 2011, Baseline interview

ఇంతకు ముందు major eventsకి మాత్రమే ఉపయోగించే వాళ్ళము. Program జరిగిన విధానం, రైతుల భాగస్వామ్యం, logistics మీద focus చేస్తాము.

-- Field Facilitator, Field Unit 1, September 2011, Baseline interview

Reflection was restricted to major training events. We focused on logistics, farmer attendance, and overall conduct of the program.

-- Field Facilitator, Field Unit 1, September 2011, Baseline interview

Before the action research intervention, field facilitators recorded their travel in the ‘movement register’ after returning from a training or meeting. The register recorded date, departure time, person name, village visited, arrival time, and remarks. FFs reported that the ‘remarks’ column was primarily used to record reasons for their inability to reach the field site, such as transportation problems, or weather conditions. There was no standard practice in place to share issues or concerns, collectively reflect on the particular experience, identify learning, strategize, and plan for follow-up. For example, on returning from participation in the CCAC meetings in different habitations on 24th August 2011 and 14th September 2011, I did not witness the FFs engaging in any debriefing on the outcomes of participation in those meetings. FFs informally discussed the outcomes of those field visits amongst themselves. Formal debriefing in both instances took place only when I specifically requested the FOs for it. Together, this data indicates that FFs were acting as a set of individuals with designated tasks rather than as team members working collectively to achieve common goals, and that they restricted themselves to “survival learning” or “adaptive learning” (Senge, 1990, p. 14).

Documenting Farmer Trainings

In reviewing the baseline data, the minutes of monthly review and planning meetings of the two Field Units, I found that the plan for each month was laid out in a tabular format that indicated: date, activity, place, and person responsible. Plans did not mention objectives and agenda of the proposed activity; roles and responsibilities; assistance required; and strategies for effective implementation, if any:

నెలకు ఒకసారి మీటింగ్ జరిపించారు. మీటింగు నిర్వహించేటప్పుడు గత నెలలో ఏమి సాధించాము ఏమి backlogs ఉన్నాయి, వాటికి follow-up actionకు సంబంధించిన plan కూడా ఉన్నట్లు లేదు. Activities అమలుపరుస్తున్న క్రమంలో ఏమైనా సందేహాలువస్తే, వాటిని నివృత్తి చేయడానికి సిబ్బందితో మరలా మధ్యలో సమావేశ నిర్వహించడం, వాటి పరిష్కారమార్గాలను అన్వేషించడం వంటి ప్రక్రియ జరిగినట్లు reportలో ఎక్కడా కనిపించడం లేదు.

-- Researcher's notes from FFs' Reflection Exercises, September 2011, Field Units 1 and 2

A meeting was held once a month. In the meeting minutes, it is not clear whether the discussions included achievement, backlogs, and follow-up plans. How were challenges in implementation resolved? It is not clear from the reports if any interim meetings were conducted to help FFs resolve emerging issues or develop strategies to overcome challenges.

-- Researcher's notes from FFs' Reflection Exercises, September 2011, Field Units 1 and 2

The review of the preceding month's work focused on achievements of the previous month. Meeting minutes did not include a discussion of achievements against targets planned for the month; did not identify the backlogs, if any; and did not identify issues and constraints in implementation. Lessons learned from implementation were not identified and discussed, nor did minutes state any follow up plans or strategies. Aside from this, report writing seemed to have been restricted to documenting large farmer training events. It appeared that documentation of such events was done largely for submission of reports to the Project Management.

Major events కి మాత్రమే వ్రాసే వాళ్ళం. ఉపోద్ఘాతం, place, date, attendance, agenda points, meeting minutes. -- Field Facilitator, Field Unit 1, Focus Group Discussion, October 2012, Post-intervention

Reports were drafted for major training events. The contents included: introduction, place, date, attendance, agenda points, and meeting minutes.

-- Field Facilitator, Field Unit 1, Focus Group Discussion, October 2012, Post-intervention

Action plan, accomplishments, budget, and workshop report – professionals చేస్తున్నారు.

-- Field Facilitator, Field Unit 2, Focus Group Discussion, September 2012, Post-intervention

Professionals alone drafted the action plan, accomplishments, budget, and workshop reports.

-- Field Facilitator, Field Unit 2, Focus Group Discussion, September 2012, Post-intervention

Apparently, the responsibility to draft reports was restricted to senior colleagues, i.e. P-LWM and P-NFE. Usually the report outline included introduction, place, date, attendance, agenda points, and meeting minutes. Thus, documentation was viewed as being for the use of others rather than to assist team members in improving their interactions with farmers.

From these observations, I conclude that documentation of CCAC training and meeting activities was inadequate. Additionally, inadequate documentation of the field visit experience meant that FFs had to rely on memory to recollect previous experiences and plan the subsequent training event. This could have further complicated their work if, for some unforeseen reason, the FF or team of FFs did not remain the same between two training events. Even if the same FF or team of FFs were to continue between two training events, the practice would have relied heavily on recollection from memory. Despite strong oral traditions and reliance on memory (Chavva & Smith, 2012), lack of systematic analysis of CCAC activities undermined planning for the next training event. Inadequate documentation also provided sparse or inappropriate data on which the FFs could base a “dialogue” in their reflection on activities, a key action for cultivating a community of practice. In taking that approach, FFs were wasting resources and skills that could become useful for designing and implementing farmer trainings.

In the next section, I discuss FFs use of collective practices following the action research intervention.

Collective Practices Assist FFs in Cultivating a Community of Practice

In this section of the data analysis, I focus on the four main activities of the action research intervention itself, Field Facilitators' (FFs') new practices of:

1. Collective planning,
2. Observing facilitation,
3. Reflecting on farmer trainings, and
4. Documenting farmer trainings.

I have drawn the analysis from the data collected during and after the intervention. At the end of this section, I also present data about the factors influencing (constraints and supports) the FFs' adoption of new collective practices during the action research intervention.

Collective Planning

Following the action research intervention, collective planning appeared to be taking root as an established practice. In their reports, FFs recorded that they collectively developed plans for all farmer trainings and CCAC meetings. The evidence that this actually happened was present in their reports, where they presented their training plans in a tabular format that specified the training objectives, activities, time allotted for each activity, responsibility, materials used, and assistance needed.

ప్రతి కార్యక్రమానికి ముందు ప్రణాళిక తయారుచేసుకుంటున్నాం. గ్రామానికి వెళ్ళేముందు ప్రణాళిక తయారుచేసుకోవడం వలన అనుకున్న లక్ష్యాన్ని అనుకున్న సమయంలో సాధిస్తున్నాం. విధులు-బాధ్యతలపై స్పష్టత ఉండడం వలన పనిభారం తగ్గింది. -- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We are preparing plans before each activity. Developing field visit plans before going to the village is helping us achieve planned objectives within the timeframe. Clarity of roles and responsibilities is

reducing the work stress.
Post-intervention

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion,

ఒక కార్యక్రమం చేసేముందు ప్రణాళిక ఏవిధంగాచేయాలో అర్థమైంది. ఎవరు ఏమి చేయాలో బాధ్యతలు తెలిసినాయి. ఫీల్డ్లో ఏది ముందు, ఏదివెనుక చేయాలో అర్థం అయింది. ఏదైనా కార్యక్రమంలో ఏవ్యక్తి ఏది మాట్లాడాలి, ఎప్పుడు మాట్లాడాలి అనే విషయం అర్థమైంది.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

I have learned how to prepare a plan for an activity (farmer training/meeting). This helped me understand who needs to do what (greater clarity of roles). I now know how to implement an activity in a sequence. In a meeting/training, I now understand who needs to talk about what and when.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

FFs reported that clarity in roles and responsibilities included: preparatory work such as identifying a training venue that was acceptable to the farmers, getting it cleaned, transporting farmers to the training venue, transporting training materials, and facilitation of training. The plans laid out in all FFs' reports showed that one or two individuals were assigned each of these particular responsibilities. Thus, the collective planning process "created a rhythm" for cultivating FFs' community of practice as the FFs met prior to each farmer training to develop plans. These quotes demonstrate that the collective planning helped build the capacity of this particular FF to prepare a plan and that clarifying roles and responsibilities helped the FF understand better how to run the meeting or training activity. Consequently, this reduced stress in implementing the farmer trainings. These comments indicate the "immediate value" addition to the FFs of the collective practices.

FFs also reported in the post-intervention focus group discussions that participating in the collective planning exercise led to individual FFs acquiring new skills and improving existing skills, a key aspect and goal in developing communities of practice:

ప్రణాళిక తయారుచేయడం నేర్చుకున్నాను. ఫీల్డ్లో తోటి సిబ్బందితో కలిసి పనిచేయడం నేర్చుకున్నాను. కార్యక్రమానికి కావలసిన సామగ్రి గైడ్స్ ముందుగానే తయారుచేసుకుంటున్నాను. షెడ్యూలు ప్రకారం సమయపాటన పాటిస్తున్నాను.

-- Field Facilitator, Field Unit 2, Focus group discussion, September 2012, Post-intervention

I learned how to prepare a plan. I learned how to implement an activity along with my colleagues (teamwork). We are now preparing a (session) plan and materials beforehand. We maintain time according to the plan.

-- Field Facilitator, Field Unit 2, Focus group discussion, September 2012, Post-intervention

అందరికీ skills పెరుగుతున్నాయి. Confidence పెరుగుతుంది. Task clarity and role clarity. Materials కలిసి తయారు చేయడం వలన ఎలా facilitate చేయాలో (ఎందుకు, ఎలా) అనే ప్రశ్నలు కూడా తెలుస్తావుంటాయి.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Skills of all staff are improving. Confidence is increasing. There is task clarity and role clarity. Because we prepare materials collectively, we also learn what questions should be asked when facilitating.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

అందరు FFs facilitate చేయడానికి encourage చేస్తున్నాం. మొదట చిన్నచిన్న అంశాలు ఇస్తున్నాం. వాళ్ళ ఉత్సాహాన్ని బట్టి పెద్ద అంశాలు individualగా facilitate చేయడానికి అవకాశాలు ఉన్నాయి, వస్తున్నాయి.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We are encouraging all FFs to facilitate. Initially, we give them smaller topics to facilitate. Additional opportunities /responsibilities to facilitate are provided based on their abilities and initiative.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

నాకు ఫెసిలిటేషన్ చేసే అవకాశం వచ్చింది. అందరికీ ఫెసిలిటేషన్ చేసే అవకాశం వచ్చింది, వ్యక్తిగత నైపుణ్యాలు పెరిగినాయి.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

I got an opportunity to facilitate. As everyone is getting an opportunity to facilitate, individual skills are improving.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

These quotes support the finding that the collective planning activities taught FFs how to prepare plans, develop training materials and implement activities. Additionally, all team members were being encouraged to facilitate, which was not the practice earlier. Prior to the action research intervention, as discussed in the baseline findings, only P-LWM and P-NFE were facilitating and the VCs were looking after training arrangements and logistics. Following the action research intervention, all FFs were getting an opportunity to facilitate. This process “combined familiarity and excitement” as it built on FFs’ current skills and knowledge. Thus, participation in the collective planning

created “potential value” for the FFs through enhanced skills and improved capacity to work as a team.

FFs shared in the post-intervention focus group discussions that it had become a practice for all team members to participate in the development of training plans for the farmer trainings.

అందరం కలిసి ప్రణాళిక తయారు చేస్తున్నాం. ప్రతి కార్యక్రమానికి ప్రణాళిక తయారు చేసి నోట్ పుస్తకం మరియు చార్ట్ పైన వ్రాస్తాం. ఇంతకు ముందు ఫీల్డ్ రిపోర్ట్స్ చర్చించి దాని ఆధారంగా ప్రణాళికను ఆలోచన చేస్తున్నాం. కావలసిన materialను ముందుగానే కలిసి తయారు చేసుకుంటున్నాము.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We work collectively to prepare the plan. We prepare a plan for each activity. We write the plan in a note book and on the chart (for display in the training). We are discussing previous field visit reports and are developing plans accordingly. We prepare the required material ahead of time.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

సిబ్బంది మధ్య సహకారం పెరగడం వలన కార్యక్రమాలు విజయవంతంగా నిర్వహిస్తున్నాం. టీంవర్క్ ప్రాముఖ్యతను గుర్తిస్తున్నాం. -- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Improved cooperation amongst team members is helping us implement the programs successfully. We recognize the importance of teamwork.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

సిబ్బంది భాగస్వామ్యం పెరిగింది. Facilitation సులభమైనది. మేము ఏం చెప్పటానిపై prepare అవ్వడానికి వీలైంది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Staff participation has increased. Facilitation has become easier. We are able to prepare what we need to facilitate.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

అనుకోని పరిస్థితుల వలన facilitate చేయాల్సిన వ్యక్తి రాలేక పోయినా ఇంకొకరు వెంటనే అందుకుని facilitate చేస్తున్నాం. Material ముందుగానే చేసుకోవడం వలన facilitation time ఆదా అవుతావుంది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

If for some unforeseen reason the person assigned to facilitate doesn't turn up, others are able to step in easily and facilitate. As we are preparing materials ahead of time, the time spent on facilitation is reducing.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Thus, it appeared that collective planning-observing-reflecting-documenting efforts helped facilitate peer learning, promoted team building and laid the foundation for a community of practice (Wenger, 2006). These quotes speak to strengthened

relationships amongst team members and the development of a “shared repertoire of skills and resources”. Thus, collective planning contributed to improved awareness and enhanced teamwork amongst the FFs.

As further demonstration that FFs made changes to the plans and methods in response to feedback from farmer participants, I present two extended examples below. In the first example, the CCAC Orientation workshop held on 22 November 2011 at Field Unit 2 was planned for four hours. However, when FFs checked with farmers, on their arrival, farmers said that they could be present only for two and a half hours as they anticipated that electricity supply would resume in a couple of hours. Farmer participants were concerned about the frequent power cuts and erratic power supply. The FFs, with assistance of Project Officer-NFE, made on the spot alterations to the training plan and facilitated the workshop. Following the workshop, FFs reflected on the experience and decided that the facilitation methods needed to be modified to achieve the objectives in a shorter duration. The follow-up action plan indicated that training needed to be redesigned to ensure that the objectives could be achieved in 2½ hours. The revised training plan was used in the CCAC Orientation workshops conducted on 26 November 2011 and 22 December 2011.

FFs Report, Field Unit 2, November and December CCAC Orientation Workshops

సి.సి.పి.సిలకు ఓరియంటేషన్ వర్క్‌షాపు ; తేది: 23 నవంబరు 2011

గుర్తించిన సమస్య: రైతులు శిక్షణా కార్యక్రమంలో తగినంత సమయాన్ని కేటాయించలేకపోవడం కారణం విద్యుత్ సమస్యతో వ్యవసాయంలో కొట్టుమిట్టడుతూ ఉండడంవలన శిక్షణలో ఎక్కువ సమయం గడవడంలేదు.
అనుసరణ ప్రణాళిక: శిక్షణా కార్యక్రమ సమూహాను మార్చి శిక్షణా ఉద్దేశాన్ని 2.5 గంటలలో సాధించడం.

సి.సి.పి.సిలకు ఓరియంటేషన్ వర్క్‌షాపు ; తేది: 26 నవంబరు 2011

పీఠింగు మినిట్స్: 4 గంటల శిక్షణా కార్యక్రమ సమూహాను 2.5 గంటలకు కుదించి శిక్షణా కార్యక్రమాన్ని ఏర్పాటు చేయడమైనది.

సి.సి.ఏ.సిలకు ఓరియంటేషన్ వర్క్‌షాపు ; తేది: 22 డిసెంబరు 2011

మీటింగు మినిట్స్: 4 గంటల శిక్షణా కార్యక్రమ నమూనాను 2.5 గంటలకు కుదించి శిక్షణా కార్యక్రమాన్ని ఏర్పాటు చేయడమైనది. దీని వలన సభ్యులందరూ శిక్షణా కార్యక్రమాని 2 గంటలలో విజయవంతంగా ముగించుకోవడం జరిగింది. సభ్యులందరూ బాగా భాగస్వామ్యం వహించడం జరిగింది. వర్క్‌షాపును ప్రశాంతంగా, అన్ని సౌకర్యాలతో విజయవంతంగా సాగించడం జరిగింది.

FFs Report, Field Unit 2, November and December CCAC Orientation Workshops

CCAC Orientation Workshop – I; 22 November 2011

Issue: Participants did not spend adequate time to discuss vision because of erratic power supply.

Follow-up plans:

- Make changes to the workshop design to accomplish objectives within two hours.

CCAC Orientation Workshop – II; 26 November 2011

Meeting minutes: Four-hour workshop plan was compressed to two-hour plan. Participants were assured that the workshop would be completed in two hours.

CCAC Orientation Workshop – III; 22 December 2011

Meeting minutes: Four-hour workshop plan was compressed to two-hour plan. Participants were assured that the workshop would be completed in two hours. Participation was good. Workshop went smoothly and there were no logistical issues as well.

The second example is of a CCAC meeting at Field Unit 1, where participants asked that posters be used to illustrate the concepts of climate change and variability. Accordingly, FFs collected posters on the topics and used them in the next CCAC meeting.

FFs Report, Field Unit 1, CCAC meetings

CCAC కమిటీ సమావేశము ; తేది: 20-1-2012

గుర్తించిన సమస్యలు: వాతావరణ మార్పు, వైవిధ్యం గురించి తెలిపే పోస్టర్లు ఉంటే రైతులు బాగా అర్థంచేసుకుంటారు అని సభ్యులు కోరడం జరిగింది.

అనుసరణ ప్రణాళిక: CCAC సమావేశంలో వాతావరణ మార్పు, వాటి ప్రభావం గురించి తెలిపే పోస్టర్లు లేదా కరపత్రాలు ఇవ్వడం.

CCAC కమిటీ సమావేశము ; తేది: 20-2-2012

అజెండా: వాతావరణ మార్పు, వాటి ప్రభావం గురించి పోస్టర్లు/కరపత్రాలు తయారుచేసి సభ్యులకు పంచడం
మీటింగు మినిట్స్: CCAC కమిటీలో FFs స్పాక్ ప్రాజెక్టు ఉద్దేశాలు మరియు కార్యక్రమాల గురించి వివరించి వాతావరణమార్పు, వాటి ప్రభావం గురించి సభ్యులకు వివరంగా వివరించడం జరిగింది. దీనికి సంబంధించిన కరపత్రాన్ని సభ్యులకు అందరికీ పంచడం జరిగింది.

FFs Reports, Field Unit 1, CCAC meetings

CCAC meeting; 20th January 2012

Issues identified: CCAC members expressed that it would be helpful if concepts of climate change and variability are illustrated using posters

Follow-up plan: Collect or prepare posters on concepts of climate change and variability

CCAC meeting; 20th February 2012

Agenda: Use posters to illustrate concepts of climate change and variability to the CCAC members

Meeting minutes: FFs shared the objectives of SPACC project and used posters to illustrate concepts of climate change and variability to the CCAC members. Also, handouts on climate variability and change were distributed to those present.

FFs stressed in the post-intervention focus group discussions that there was a positive impact of collective planning in improving training outcomes, through the development of more comprehensive and realistic training plans.

సంపూర్ణ ప్రణాళిక. సమయపాలన బాగుంది. Success rate పెరిగింది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Comprehensive plans. Time management is good. Success rate has improved (achievement of planned objectives has improved).

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

శిక్షణా కార్యక్రమంలో వివిధ పద్ధతుల ద్వారా ఫెసిలిటేట్ చేయడం వలన తక్కువ సమయంలో ఉద్దేశాలను సాధిస్తున్నాము. కొన్ని సందర్భాలలో ఫీల్డ్లో రైతులు వారు కేటాయించిన సమయానికి అనుగుణంగా శిక్షణా కార్యక్రమంలో సెషన్ ప్రణాళికను కూడా మార్చుకొని ఉద్దేశాలను సాధిస్తున్నాము.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Use of various methods is helping us complete facilitation in a short timeframe and achieve good results. In some instances, keeping in mind the farmers' convenience, we are making changes to the session plan and achieve the planned objectives.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

పరిస్థితులకు అనుగుణంగా ప్రణాళికను team చర్చించి సవరణలు చేసి వేరు పద్ధతులను ఉపయోగించి అనుకున్న ఉద్దేశాలను సాధించగలుగుతున్నాం.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

The team discusses the plan in response to the situation, makes changes, uses alternate methods and we are able to achieve the planned objectives.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

కార్యక్రమం time, date రైతులతో చర్చించి finalize చేస్తున్నాము.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Time and date of the program are finalized in consultation with the farmers.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

ఫీల్డ్ స్టాఫ్‌కు అవగాహన పెరగడం వలన గ్రామ రైతులను బాగా motivate చేయగలుగుతున్నారు.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

As field facilitators are more aware of the activity, they are able to better motivate farmers.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Freeగా రైతులతో interact అవుతున్నాం. చెప్పాల్సిన సమాచారంలో స్పష్టత మరియు నాణ్యత పెరిగింది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We are able to interact freely with farmers. Clarity and quality of the information shared is improving.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

స్థానికీ అవసరాలు గుర్తించి విషయ సమయాన్ని నిర్ణయించడం వలన సెషన్ సజావుగా సాగింది. వాళ్ళ సహకారంతో నిర్ణయిస్తున్నాం, కాబట్టి రైతుల బాధ్యత పెరిగింది. భాగస్వామ్యం పెరిగింది.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Sessions are taking place smoothly as we decide the time based on the field realities. As we decide in consultation with the farmers, so their responsibility has increased. Participation has improved.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Collective planning led to discussing field realities and farmer needs, then planning and implementing activities accordingly, thus improving participation and outcomes. It was clear to FFs that collective planning led to development of realistic plans and improved training outcomes.

Overall, FFs reports from both field units provided strong evidence that the practice of collective planning led to greater task clarity and role clarity as the training plans specified time, activity, responsibility, materials used, and assistance needed. The observation checklists in the same reports documented that all team members facilitated training activities, which are supported by FFs' statements. Facilitation opportunities for all team members led to development of individual skills. Additionally, facilitation skills of all team members improved as they prepared the facilitation tasks assigned to them ahead of time, leading to improved confidence amongst team members. Their collective planning and reflection also strengthened team work and preparation of realistic plans.

Furthermore, they reported changing training plans to respond to farmers' requests and preparing materials ahead of time to make optimal use of facilitation time. As a result, they were able to interact more easily with farmers in trainings. All these actions demonstrated that the collective planning led to improved training design and delivery—an “applied value”.

Observing Facilitation

Following the action research intervention, FFs reported using the observation checklist in all trainings to observe their peers' facilitation. Review of the FFs' reports confirmed that they used the observation checklist to record their observations on the facilitation of their peers. While one FF facilitated a particular segment of the training, the other FF observed the facilitation process and checked the relevant boxes to record his/her observations on the observation checklist. The reverse side of some of the observation checklists contained suggestions on ways to improve facilitation.

మహిళల భాగస్వామ్యం పెంచాల్సిన అవసరం చాలా ఉంది. మహిళలకు మాట్లాడే అవకాశం ఇతర సభ్యులచేత ఇప్పించి వారి అభిప్రాయాలు తెలియజేసే విధంగా సౌకర్యం కల్పించాలి.

-- FFs Report, Field Unit 1, 31 October 2011, CCAC meeting

Women's participation (in discussions) should be improved. You should create an environment wherein women participants feel comfortable to share their views.

-- FFs Report, Field Unit 1, 31 October 2011, CCAC meeting

వర్క్ షాపు ఆఖరులో మాల్వాంకణం చేయలేదు. సమయం లేనందువల్ల ఈ ప్రక్రియ చేయలేదు. కాని, ఈ విషయాలను సి.సి.ఎ.సి నెలవారి సమావేశంలో వారిచేత పంచుకుంటే బాగుంటుంది.

-- FFs Report, Field Unit 2, 22 November 2011, CCAC Orientation Workshop I

Evaluation was not done at the end of the workshop as there was no time left. It would be helpful to ask for participants' feedback in the next CCAC meeting.

-- FFs Report, Field Unit 2, 22 November 2011, CCAC Orientation Workshop I

మహిళల భాగస్వామ్యం పెంచాలి. మూఖ్యంగా కొత్త సభ్యుల

-- FFs Report, Field Unit 2, 22 November 2011, CCAC Orientation Workshop I

Women's participation, especially of new members, should be improved.

-- FFs Report, Field Unit 2, 22 November 2011, CCAC Orientation Workshop I

కేటాయించిన సమయంలోపల సెషన్‌ను పూర్తి చేసినట్లయితే రాబోవు ఫెసిలిటేటరుకు ఇబ్బంది కలగదు మరియు సభ్యులకు విసుగురారు. -- FFs Report, Field Unit 2, 26 November 2011, CCAC Orientation Workshop II

It would be easier for the next facilitator if the session is completed in the allotted time. Also, it would not frustrate the participants.

-- FFs Report, Field Unit 2, 26 November 2011, CCAC Orientation Workshop II

రైతులతో ప్రాజెక్టు కార్యక్రమాలు చర్చిస్తున్నప్పుడు, ప్రతి కార్యక్రమం యొక్క ప్రాముఖ్యత ఏమిటి, ఎందుకు, ఎప్పుడు వంటి ప్రశ్నలు ఫోబ్ చేస్తే వారి పాత్ర పెరుగుతుంది. మరియు వాటి ప్రాముఖ్యతను గుర్తిస్తారు.

-- FFs Report, Field Unit 1, 20 January 2012, CCAC meeting

When discussing project activities with farmers, it is important to engage the farmers with probing questions such as what is its importance, why, and when. This will help farmers' recognize the importance of the topic.

-- FFs Report, Field Unit 1, 20 January 2012, CCAC meeting

విషయాలను విపులంగా విశదీకరించి సభ్యులకు తెలియజేసే విధంగా సిద్ధపడాలి (ప్రిపేర్ కావాలి).

-- FFs Report, Field Unit 1, 20 January 2012, CCAC meeting

You should prepare well so that you can explain the concepts to participants in detail.

-- FFs Report, Field Unit 1, 20 January 2012, CCAC meeting

సెషన్ ఉద్దేశ్యాలను చర్చ ప్రారంభంలోనే వివరంగా సభ్యులతో పంచుకోవాలి. అలా చేసినట్లయితే సభ్యులు చర్చించాల్సిన విషయంపై వారికున్న సందేహాలు అడగడానికి వీలుంటుంది. తద్వారా వారికి చర్చించే విషయంపై దృష్టి కేంద్రీకరిస్తారు.

-- FFs Report, Field Unit 1, 12 February 2012, CCAC meeting

Session objectives should be shared with the participants at the beginning. This would enable participants to ask clarifying questions on process and focus on the discussion topic.

-- FFs Report, Field Unit 1, 12 February 2012, CCAC meeting

చిన్నగ్రూపు చర్చలో ఎవరు బాగా మాట్లాడుతున్నారు, ఎవరు చర్చలో పాల్గొనడంలోదో గమనించి వారిని కూడా చర్చలో పాల్గొనేటట్లు ప్రోత్సహించాలి.

-- FFs Report, Field Unit 1, 15 March 2012, CCAC meeting

It is important to observe participation of individual members in small group discussions and encourage everyone to participate.

-- FFs Report, Field Unit 1, 15 March 2012, CCAC meeting

సభ్యులలో ఆగ్రోమెట్ స్టేషన్ గురించి చాలా సందేహాలను మీరు నివృత్తి చేయడం బాగుంది.

-- FFs Report, Field Unit 2, 9 April 2012, CCAC meeting

You were effective in clarifying participants' doubts on the PCM station.

-- FFs Report, Field Unit 2, 9 April 2012, CCAC meeting

After the conclusion of the training, the observer used the marked checklist to give feedback to the other facilitator. Also, FFs reviewed the observations during the team's group reflection on the event to discuss relevance of facilitation methods, seating arrangements, farmer participation, materials used, and other logistics. They reported that

this helped identify appropriate strategies and follow-up plans for subsequent trainings.

The following quotes from FFs demonstrate that use of the observation checklist helped

FFs improve their facilitation over time:

Observation checklist facilitator గమనించడానికి ఉపయోగపడుతుంది. ప్రతి కార్యక్రమంలో వాడుతున్నాం.

-- Field Facilitator, Field Unit 2, Focus group discussion, September 2012, Post-intervention

The observation checklist is useful to observe facilitator. We are using it in all programs (trainings).

-- Field Facilitator, Field Unit 2, Focus group discussion, September 2012, Post-intervention

ఫెసిలిటేషన్ క్రమేణా మెరుగుపడింది. కారణం, శిక్షణా కార్యక్రమానికి ముందే ప్రణాళిక చేసుకోవడం, ఈ ప్రణాళికలో ఎవరు ఏ బాధ్యతలను నిర్వహించాలో (ముందే ప్రణాళికచేయడంలోనే స్పష్టంగా వ్రాయడం) స్పష్టత ఉండేది. ప్రణాళిక ప్రకారం విధులు-బాధ్యతలను నిర్వహించడం. కార్యక్రమానికి సరిపడే శిక్షణా సామగ్రిని తయారుచేసి, వాటిని ఉపయోగించి ఫెసిలిటేషన్ పైన సాధన చేయడం, నాకు కేటాయించిన అంశాల గురించి నాతోటి సిబ్బందితో చర్చించడం, వారినుంచి ప్రభావవంతమైన ఫెసిలిటేషన్ కొరకు సూచనలు మరియు సలహాలను పొందడం, వాటిని ఆధారంగా తదుపరి ప్రణాళికను తయారుచేయడం జరిగింది. దీని ఫలితంగా నా ఫెసిలిటేషన్ మెరుగుపడింది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We prepare a plan before a training program. The plan clarifies roles and responsibilities. We carry out the assigned /agreed upon responsibilities. We develop the relevant training materials and practice facilitation. I discussed the topics assigned to me with my colleagues for ideas and advice on how to facilitate. All these helped me improve my facilitation skills.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

నేను ఈ ప్రాజెక్టులోని అంశాలను కొత్త, శిక్షణా కార్యక్రమాన్ని అమలుచేసే ముందు నాతోటి సిబ్బందితో ఫెసిలిటేట్ చేసే అంశాల్ని గురించి చర్చించడం మరియు ఆ అంశాలపై ఎలా ఫెసిలిటేషన్ చేయాలో వారి వద్దనుంచి తగిన సూచనలు, సలహాలు తీసుకున్నాను. వారు ఇస్తున్న సూచనలు సలహాలు నా వ్యక్తిగత అభివృద్ధికి అని సానుకూల దృక్పథంతో ఆహ్వానించాను. ఈ ప్రక్రియలో నాతోటి సిబ్బంది అందరూ సమానమే అనే భావనతోనే వారి సలహాలు, సూచనలు స్వీకరించాను. ఈ ప్రక్రియలో నేను నేర్చుకున్నది. వినయాల/అంశాలు నేర్చుకోవాలనేది నా తపన. ముఖ్యంగా ప్రజెక్టు ఉద్దేశాలను సాధించే నేపథ్యంలో అందరూ సమానమే. నేను ఫెసిలిటేషన్ చేసిన కార్యక్రమంపై వారు ఇచ్చిన ఫీడ్ బ్యాక్ ఆధారంగా ఫెసిలిటేషన్లోని మెళుకువలు నేర్చుకున్నాను. వీటి ఫలితంగానే నా ఫెసిలిటేషన్ మెరుగుపడింది. ఈ ప్రక్రియ ను అవలంబించడం వలన శిక్షణా కార్యక్రమంలో రైతుల భాగస్వామ్యం మెరుగుపడింది.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

I was new to the project concept. I discussed the topics to be facilitated ahead of time with the team. I sought guidance of my colleagues on how to facilitate. Also, I reacted positively to their feedback (on my facilitation). I perceive all my team members as equals working to accomplish project goals. I believe their feedback is for my betterment and used it to improve my facilitation skills.... All these helped me to improve my facilitation skills and seek farmers' feedback. This process has improved farmers' participation in training events.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

నాకు గత 20 సంవత్సరాలుగా గ్రామీణ ప్రజలతో పనిచేసిన అనుభవం ఉంది. అయినా ఈ స్పాక్ ప్రాజెక్టులోని అంశాలు కొత్త అంతేకాకుండా నేను ఈ విధంగా శిక్షణా ప్రక్రియలో వివిధ పద్ధతులను ఉపయోగించి ఇంతకుముందెన్నడూ ఇలా పనిచేయలేదు. అయితే గతంలో నేను చేపట్టిన శిక్షణా కార్యక్రమంలో ఎక్కువగా లెక్చరర్ (వ్యాకరణం) పద్ధతిలోనే కార్యక్రమాన్ని నిర్వహించేవాడిని. ప్రస్తుతం శిక్షణా కార్యక్రమాన్ని ఒక క్రమపద్ధతిలో చెప్పాలని

ఇప్పుడు నేర్చుకున్నాను. శిక్షణా కార్యక్రమమానికీ ముందుగానే ప్రణాళిక తయారుచేసుకోవడం పద్ధతులు మరియు నిర్వహణా విధానంపై చర్చించుకోవడం విధులు-బాధ్యతలు పంచుకోవడం, నిర్వహించిన కార్యక్రమంపై సమీక్ష చేసుకోవడం జరుగుతున్నది. అంతేకాక నాతోటి సిబ్బంది సహకారంతో కూడా నాఫెసిలిటేషన్ మెరుగుపడింది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

I have twenty years of experience with rural communities. However, I am new to this concept (climate change/variability). Also, I did not use these facilitation methods before. Earlier, I used to give lectures to the community on various issues. I now understand that facilitation should be done in a systematic manner. Planning prior to an event and sharing facilitation responsibilities, and reflecting on the training event are new to me. The planning exercise helps us to discuss facilitation methods and processes. Further, we share training responsibilities and evaluate our performance after the event. The cooperation from my team members has improved my facilitation skills.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Thus, my discussions and those of my co-researcher with the FFs confirmed that the use of peer-to-peer observation (using the checklist) provided “immediate value” to the FFs in both field units. FFs reported feeling more open to receiving feedback on their facilitation skills, incorporating feedback when planning for subsequent trainings, making conscious efforts to improve their facilitation skills, practicing their facilitation skills prior to the training event, and becoming more conscious of time management issues. These efforts to gain personal mastery (Senge, 1990) seemed to be paying off, as FFs stated that their facilitation skills and confidence had improved, and as a result, the trainings were more focused. These quotes indicate a change in how FFs related to each other as equals, and that the peer-to-peer feedback increased their sense of belongingness to the team and, as a result, strengthened the community of practice:

Feedbackను sportiveగా తీసుకుంటున్నాము. Feedbackని తదుపరి facilitation planలో పొందుపరుచు కుంటున్నాము. Facilitation సక్రమంగా చేయాలి అనే భావన పెరిగింది. Facilitation skills improve అయినాయి. ఆత్మస్థైర్యం పెరిగింది. వ్యక్తిగతంగా సంసిద్ధం కావడం జరిగింది.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We are being more sportive in receiving feedback. We are incorporating feedback when planning for subsequent trainings. We are making conscious efforts to improve our facilitation. Our facilitation skills have improved. Our confidence has improved. Individually we are striving to be better prepared.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

ఏయే అంశాలు గమనించాలో తెలుస్తుంది. Facilitatorకు సమయపాలనపై దృష్టివుంది. Topic divert కాకుండా focused ఉండడానికి వీలవుతుంది. నేను బాగా చేయాలి అని ప్రయత్నం చేస్తున్నాం. Staff వ్యక్తిగత నైపుణ్యాలు గుర్తించడానికి ఉపయోగపడుతుంది. ఎవరికి ఏ బాధ్యతలు ఇవ్వాలి తెలుస్తుంది. ఎవరి నైపుణ్యాలు పెంచాలో తెలుస్తుంది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We now understand which aspects need to be observed. Facilitator is more conscious of time management. Trainings are more focused without diverting from the topic. We are making conscious efforts to improve our facilitation. This aids in identifying individual strengths of staff. This helps us in assigning responsibilities and assists in developing a capacity building plan.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Observation checklists enclosed in FFs' reports provided strong evidence of peer-to-peer feedback. FFs' responses point to effectiveness of peer-to-peer feedback in improving facilitation skills, and that it led to the "potential value" of improved camaraderie –mutual trust and friendship—amongst FFs.

Reflecting on Farmer Training Events

Following the action research intervention, FFs said that all team members collectively reflected after each training activity, discussed logistics, facilitation methods, materials prepared and materials used, time management, achievement of objectives, farmer attendance, farmer participation, issues that emerged during the training, and strategies to address issues that emerged during the training.

కార్యక్రమం అనంతరం చేసుకుంటున్న చర్చ ప్రతి కార్యక్రమము తరువాత అదే రోజుగాని లేక మరుసటి రోజు గాని సమీక్ష చేస్తున్నాం.

-- Field Facilitators, Field Units 1 and 2, September and October 2012, Focus group discussions, Post-intervention

Presently, we collectively reflect either immediately after the conclusion of the activity on the same day or on the following day.

-- Field Facilitators, Field Units 1 and 2, September and October 2012, Focus group discussions, Post-intervention

సమస్యలను గుర్తిస్తున్నాం ఏది ఎలా మెరుగు పరుచుకోవాలి, భవిష్యత్తులో అదే సమస్యలను ఎలా ఎదుర్కోవాలో వ్యూహాలను తయారు చేసుకుంటున్నాం. ప్రతి అంశముపైన సమీక్ష చేస్తున్నాం తరువాత వ్యూహాలను ఏర్పాటు చేసుకుంటున్నాం. కొన్ని సమస్యలు వెంటనే పరిష్కారమవుతున్నాయి.

-- Field Facilitators, Field Units 1 and 2, September and October 2012, Focus group discussions, Post-intervention

We are identifying issues, discussing how to improve and developing strategies to address similar issues in future. We discuss each aspect and develop strategies. -- Field Facilitators, Field Units 1 and 2, September and October 2012, Focus group discussions, Post-intervention

FFs reported that these reflections on specific aspects of the training and how to improve the process resulted in a more comprehensive analysis of their work. A follow-up plan and 'to do' list emerged from these discussions. At times, these discussions helped identify decisions that needed to be taken immediately. Here, I present two examples from FFs' reports that demonstrate how FFs dealt with the problem of low attendance at CCAC meetings:

FFs Reports, Field Unit 1, CCAC meetings

CCAC సమావేశము ; తేది: 6th and 7th April, 2012

సమస్యలు:

1. CCAC కమిటీ సమావేశంలో హాజరు తగ్గడం. హాజరైన సభ్యులు-17
2. HDPE డేటా తీయకపోవడం, పైపులు బయట ఉడటం

అనుసరణ ప్రణాళిక:

1. CCAC కమిటీ సభ్యులు హాజరుకు సంబంధించి, హాజరుకాని సభ్యులను వ్యక్తిగతంగా కలవడం
2. HDPE re-lowering చేయించడం, డేటా తీయడం

CCAC సమావేశము ; తేది: 17 May 2012

మీటింగు మినిట్స్:

1. మారెమ్మ భూగర్భజల మరియు వాతావరణ పర్యవేక్షణ కమిటీ సమావేశంలో కమిటీ సభ్యుల హాజరు పెరిగింది. హాజరు - 23, స్త్రీలు-13 , పురుషులు-10
2. బోరుబావుల నీటిమట్టాల గురించి తెలుసుకోవడానికి HDPE పైపులను బిగించడం జరిగింది. దీనివలన నిలకడ నీటిమట్టం డేటా తీయడం జరుగుతున్నది. 7 మంది రైతులు క్రమం తప్పకుండా డేటాను కొలవడం జరుగుతున్నది.

FFs Reports, Field Unit 1, CCAC meetings

CCAC meeting; 6th and 7th April 2012

Issues identified:

- Low attendance; 17 CCAC members were present
- Water level data was not collected as HDPE pipes were removed

Follow-up plan:

- Meet CCAC members individually and encourage them to attend CCAC meetings
- Re-insert HDPE pipes and ensure regular collection of water levels data

CCAC meeting; 17th May 2012

Meeting minutes:

- CCAC members attendance improved; 23 members, including 13 female and 10 male members, attended the meeting
- HDPE pipes were re-inserted into the borewells. Static water levels were being regularly collected by 7 farmer volunteers in their respective borewells.

FFs Reports, Field Unit 1, CCAC meetings

HU-CCAC సమావేశము ; తేది: 31 October 2011

సమస్య: HU CCAC కమిటీ సభ్యులకు హాజరు పెంచాల్సివుంది.

అనుసరణ ప్రణాళిక: HU CCAC సమావేశంలో సభ్యుల హాజరు పెంపు.

HU-CCAC సమావేశము ; తేది: 28 February 2012

మీటింగు మినిట్స్: నక్కలవాగులోని ప్రతి గ్రామస్థాయి నుంచి ఇద్దరు CCAC కమిటీ సభ్యులు హాజరుకావడం జరిగింది.

దీంతో హాజరు 13 మంది పురుషులు మరియు 8 మంది స్త్రీలు హాజరైనారు. మొత్తం 21 మంది హాజరైనారు.

FFs Reports, Field Unit 1, CCAC meetings

HU-CCAC meeting; 31st October 2011

Issues identified: Low attendance of HU-CCAC members

Follow-up plan: Meet CCAC members individually and encourage them to attend CCAC meetings

HU-CCAC meeting; 28th February 2012

Two CCAC members from each village participated in HU-CCAC meeting. As a result, 21 members, including 8 female and 13 male members attended the meeting.

Here are two examples, also from FFs' reports, demonstrating that issues identified during reflections after a training event were addressed in a subsequent training event. These examples indicate that the practice of reflecting on field visits resulted in “applied value” of continuity between training events. In the first example, in the HU level meeting held on 12 February 2012 at Field Unit 1, the FFs' report indicated that they did not have time to discuss the roles and responsibilities of the CCAC Executive Committee because a significant amount of time was consumed in orienting the members about project objectives and activities. The follow-up plan in the report mentioned that roles and responsibilities of CCAC Executive Body members were to be shared in the

next meeting. In a subsequent HU level meeting held on 12th March 2012, roles and responsibilities of the CCAC Executive Committee were shared with the members.

FFs Reports, Field Unit 1, CCAC meetings

CCAC సమావేశము ; తేది: 12 ఫిబ్రవరి, 2012 సి.సి.ఎ.సి పదాధికారుల విధులు-బాధ్యతలు

అజెండా: సి.సి.ఎ.సి పదాధికారుల విధులు-బాధ్యతల గురించి చర్చ

సమస్య: సి.సి.ఎ.సి పదాధికారుల విధులు-బాధ్యతల గురించి శిక్షణా కార్యక్రమంలో సభ్యులకు వివరంగా తెలియజేయలేకపోవడం.

అనుసరణ ప్రణాళిక: సి.సి.ఎ.సి పదాధికారుల విధులు-బాధ్యతలు గురించి మార్చి నెల సి.సి.ఎ.సి సమావేశంలో చర్చించాలి.

CCAC సమావేశము ; తేది: 12 మార్చి, 2012

అజెండా: సి.సి.ఎ.సి పదాధికారుల విధులు-బాధ్యతల గురించి చర్చ

మీటింగు మినిట్స్: సి.సి.ఎ.సి పదాధికారుల విధులు-బాధ్యతల గురించి వివరణాత్మకంగా సభ్యులకు వివరించడం జరిగింది.

FFs Reports, Field Unit 1, CCAC meetings

CCAC meeting; 12 February 2012

Agenda: Discussion on roles and responsibilities of CCAC office bearers

Issues identified: The discussion on SPACC objectives was prolonged. Therefore, discussion of roles and responsibilities of office bearers was not completed.

Follow-up plan: CCAC office bearers' roles and responsibilities to be discussed in next CCAC meeting to be held in March.

CCAC meeting; 12th March 2012

Agenda: Discussion on roles and responsibilities of CCAC office bearers

Meeting minutes: Detailed discussion was held on roles and responsibilities of CCAC office bearers

Similarly, in the second example, in a CCAC Orientation workshop held on 26 November 2011 at Field Unit 2, all activities were conducted in large group discussion because the venue didn't have sufficient space for small group work. FFs decided that they should review meeting arrangements a day in advance along with local CCAC members. FFs also decided that the 'CCACs' vision' and 'preparation of CCAC Action Plan for 2012' should be further discussed in the subsequent CCAC meeting, and

members' inputs would be incorporated to finalize the vision and plan. FFs reported that these activities did indeed happen in the CCAC meeting held on 10 January 2012.

FFs Reports, Field Unit 2, CCAC Orientation Workshops

సి.సి.ఎ.సిలకు ఓరియంటేషన్ వర్క్‌షాపులు ; తేది: 26 నవంబరు 2011

గుర్తించిన సమస్య: శిక్షణా వేదికను ఆఖరి నిమిషంలో మార్చడం వలన శిక్షణా కార్యక్రమంలో సభ్యులు ప్రభావవంతంగా పాల్గొనకపోవడం కారణం శిక్షణా వేదిక చాలా చిన్నదిగా ఉండడం వన అసౌకర్యంగా ఉన్నందున చర్చ వివరంగా జరగలేదు.

అనుసరణ ప్రణాళిక: గ్రామస్థాయి సి.సి.ఎ.సిని సమావేశపరిచి విజన్, కార్యాచరణ ప్రణాళిక 2012 పంచుకోవాలి. సమావేశ స్థలాన్ని ముందురోజే ఆ గ్రామానికి సంబంధించిన ఫీల్డ్ ఫెసిలిటేటరు సభ్యులతో ఖరారుచేసుకోవాలి.

సి.సి.ఎ.సిలకు ఓరియంటేషన్ వర్క్‌షాపులు ; తేది: 22 డిశంబరు 2011

4 గంటల శిక్షణా కార్యక్రమ సమూహాను 2.5 గంటలకు కుదించి శిక్షణా కార్యక్రమాన్ని ఏర్పాటుచేయడమైనది. దీని వలన సభ్యులందరూ శిక్షణా కార్యక్రమాని 2 గంటలలో విజయవంతంగా ముగించుకోవడం జరిగింది. సభ్యులందరూ బాగా భాగస్వామ్యం వహించడం జరిగింది. వర్క్‌షాపును ప్రశాంతంగా, అన్ని సౌకర్యాలతో విజయవంతంగా సాగించడం జరిగింది.

సి.సి.ఎ.సి సమావేశము ; తేది: 10 జనవరి 2012

మీటింగు మినిట్స్:

- HU సి.సి.ఎ.సి విజన్‌కు గ్రామస్థాయి సి.సి.ఎ.సి సమావేశంలో సభ్యులతో పంచుకోవడం జరిగింది.
- సి.సి.ఎ.సి సభ్యులు కార్యాచరణ ప్రణాళిక 2012ను సభ్యులందరూ చర్చించి ఆమోదించారు.

FFs Reports, Field Unit 2, CCAC Orientation Workshop

CCAC Orientation Workshop – II; 26 November 2011

Issue: Participants could not participate effectively in the discussions because the venue was small and participants were cramped. The venue was selected at the last minute because the original venue (community hall) was locked.

Follow-up plans:

- Meeting arrangements to be reviewed a day in advance by the concerned FF along with local CCAC members.
- Organize follow-up discussion in village-level CCAC meetings on Vision and Action plan 2012

CCAC Orientation Workshop – III; 22 December 2011

Meeting minutes: Four-hour workshop plan was compressed to two-hour plan. Participants were assured that the workshop would be completed in two hours.

Participation was good. Workshop went smoothly and there were no logistical issues.

CCAC meeting; 10th January 2012

Meeting minutes: HU-CCAC Vision was shared in the village CCAC meeting. CCAC members discussed the draft action plan 2012 and approved it.

Likewise, in the CCAC meeting held on 7 March 2012 at Field Unit 2, the members failed to reach a decision on the site for establishment of the Participatory Climate Monitoring (PCM) station. The follow-up action plan indicated that the site selection would be based on the recommendations of a technical feasibility study, with a report about this at the next CCAC committee. Accordingly, in the meetings held on 9th and 11th April 2012, FFs informed the CCAC members about the site of the PCM station. In the same meeting, the FFs clearly explained the reasons (safety concerns) for not choosing the other habitations and sites.

FFs Reports, Field Unit 2, CCAC meetings

హన్ సి.సి.ఎ.సి సమావేశము ; తేది: 7 మార్చి 2012

అజెండా: PCM పరికరాల ఏర్పాటుపై చర్చ

గుర్తించిన సమస్య:

- PCM స్టేషన్స్ ఏర్పాటును ఎక్కడ ఏగ్రామంలో ఏపరికరాలను అమర్చాలి అనే విషయము రైతులకు/సభ్యులకు సమావేశంలో చెప్పలేకపోయాము. ఎందుకంటే పరికరాల ఏర్పాటుపై శాస్త్రీయంగా, సాఫ్టుకంగా అధ్యయనం ఇంకా పూర్తికాకపోవడం చేత రైతులకు ఏర్పాటు గురించి చెప్పలేకపోయాము.
- PCM డేటాని రైతులు ఏవిధంగా వ్యవసాయంలో ఉపయోగించుకోవాలో చెప్పలేకపోయాము.

అనుసరణ ప్రణాళిక:

- రాబోవు (ఏప్రిల్) నెలలో చేపట్టబోయే సి.సి.ఎ.సి సమావేశంలో ఏర్పాటు
- PCM డేటాని రైతులు తమ వ్యవసాయంలో ఎలా ఉపయోగించుకోవచ్చు అనే విషయాన్ని చర్చించాలి.

హన్ సి.సి.ఎ.సి సమావేశము ; తేది: 9 ఏప్రిల్ 2012

అజెండా: PCM పరికరాల ఏర్పాటుపై చర్చ

మీటింగు మినిట్స్:

- PCM పరికరాల ఏర్పాటుపై శాస్త్రీయ మరియు సాంఘిక అంశాలపై అధ్యయనంలో గుర్తించిన PCM పరికరాలు ఏర్పాటుకు అనుకూలమైన కేంద్రాలు/ప్రదేశాలు గుర్తించిన విషయాలను పంచుకోవడం జరిగింది. ఇందులో హన్ పరివాహక ప్రాంతాన్ని మూడు భాగాలుగా విభజించడం అందులో (ఎత్తైన ప్రాంతం, మధ్యభాగం మరియు దిగువభాగం) PCM పరికరాలు ఏర్పాటు చేయాలని తెలియజేయడం జరిగింది. ఇందుకోసం 4 ప్రదేశాలను ఎంపికచేయడం జరిగింది. అందులో 3 ప్రదేశాలను ఖరారుచేయడం జరిగింది. ఒకదానిని మాత్రము ఎంపిక నుంచి తొలగించడం జరిగింది, ఎందుకంటే అక్కడ PCM పరికరాలకు తగిన జాగ్రత్తలు, పరిసరాల సౌలభ్యం లేన్నందున అక్కడ (చిన్నాయపల్లి) ఏర్పాటుచేయడం లేదని తెలియజేయడం జరిగింది. ఈ ప్రక్రియలో ఎంపికచేసిన గ్రామాలు తెలుపడం జరిగింది. రైతులందరూ పైన తెల్పిన గ్రామాలలో పరికరాల ఏర్పాటుకు ఆమోదం తెలుపడం జరిగింది. రైతులందరూ ఆ గ్రామాలలో పరికరాల ఏర్పాటుకు ఆమోదం తెలుపడం జరిగింది.
- PCM పరికరం ఏర్పాటుచేయలేకపోతానికి కారణాన్ని ఆ గ్రామస్థాయి సి.సి.ఎ.సి సమావేశంలో తెలియజేయడం జరిగింది.

- PCM డేటా వలన వ్యవసాయంలో ఏరోజుకు ఆ రోజు తగిన నిర్ణయాలను తీసుకోవటానికి ఉపయోగపడుతుందని రైతులకు తెలియజేయడం జరిగింది.

గ్రామస్థాయి సి.సి.పి.సి సమావేశము ; తేది: 15 ఏప్రిల్ 2012

అజెండా: PCM పరికరాల ఏర్పాటుపై చర్చ

మీటింగు మినిట్స్: PCM పరికరాల ఏర్పాటుకోసం సాంఘికంగా, శాస్త్రీయపరంగా గుర్తించిన ప్రదేశాలను గురించి రైతులతో పంచుకోవడం జరిగింది. పరివాహక ప్రాంతాన్ని 3 భాగాలుగా విభజించి (ఎత్తైన, మధ్యభాగం మరియు దిగువ భాగం) అందులో సరియైన స్థలాలను ఎంపికచేయడం జరిగింది. ఇందుకోసం 4 గ్రామాలను ఎంపికచేయడం జరిగింది. ఈ ప్రక్రియలో ఒక గ్రామాన్ని ఎంపిక జాబితా నుంచి తొలగించడం జరిగినది. ఎందుకనగా ఆ గ్రామంలో PCM పరికరాలకు తగిన జ్ఞాతలు లేపోవడంతో ఆ గ్రామాన్ని ఎంపికచేయలేదనే విషయాన్ని రైతులకు చెప్పడం జరిగినది.

FFs Reports, Field Unit 2, CCAC meetings

HU-CCAC meeting; 7th March 2012

Session focus: Discussion on establishment of PCM equipment

Issues identified:

- Information was not provided to the farmers on the location and type of PCM instruments to be installed as the socio-technical feasibility study was in progress.
- Uses of PCM data was not explained to farmers.

Follow-up plan:

- PCM station sites should be discussed in the next meeting
- Relevance of PCM data in agriculture should be explained to farmers

HU-CCAC meeting; 9 April 2012

Session focus: Discussion on establishment of PCM equipment

- Socio-technical feasibility study findings were discussed. It was shared that the HU was divided into three parts (ridge, middle, and tail) for establishment PCM stations. Four locations were identified as suitable to establish PCM equipment. However, one location was found unsuitable because of inadequate safety for the equipment. Accordingly, three villages were selected for establishing PCM stations.
- Farmer participants recommended the establishment of PCM equipment in these habitations.
- Recommended conduct of a village-level CCAC meeting at fourth village to explain reasons for not installing the equipment there.
- Uses of PCM data in making decisions on agriculture was explained to farmers.

Village-level CCAC meeting; 11th April 2012

Session focus: Discussion on establishment of PCM equipment

Meeting minutes: Socio-technical feasibility study findings were discussed. It was shared that the HU was divided into three parts (ridge, middle, and tail) for establishment PCM stations. Four locations were identified as suitable to establish PCM equipment. However, one location was found unsuitable because of inadequate safety for the equipment. Accordingly, reasons for not establishing the equipment in the particular village were explained.

Excerpts from various FFs' reports provided important evidence of FFs' collectively reflecting after implementing farmer training events. This practice led to finding solutions to problems in implementation and continuity between training events. Additionally, it helped FFs to improve their practices and their problem solving skills.

కార్యక్రమం తరువాత చేసే సమీక్ష మెరుగుపడింది. తదుపరి కార్యక్రమానికి మెరుగుపరుచుకోవలసిన అంశాలను గుర్తిస్తున్నాం. వాటిని తరువాత చేయబోయే కార్యక్రమ ప్రణాళికలో పెడుతున్నాం. దీనివలన కార్యక్రమ అమలు ప్రభావవంతమైంది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Our reflections after implementing an activity have improved. We identify what needs to be improved for the next activity. We include them in next plan. As a result implementation of activities has improved.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

ఇతరుల అనుభవాలనుంచి నేర్చుకుంటున్నాం. రివ్యూమీటింగు చర్చల్లో ఫెసిలిటేషన్ ఎట్ల మెరుగుపరుచుకోవాలో మాట్లాడుకుంటున్నాం. అట్లే సమస్యలు-దానికి పరిష్కారమార్గాలను మాట్లాడుకుంటున్నాం. ఇట్ల చేయడం వలన ఇతరుల అనుభవాల నుంచి మిగతా అందరూ తెలుసుకోవడం జరుగుతాంది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We are learning from others' experiences. In review meetings, we discuss how to improve our facilitation (skills). Likewise, we are able to find solutions to problems (in implementation). Doing so is helping us to learn from each other's reflections on what we are doing.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Aside from the “applied value” of continuity between training programs, the practice of reflecting on farmer capacity building activities had an “immediate value” of finding solutions to problems experienced in the implementation of training activities. Also, FFs reported in post-intervention focus group discussions, that the process provided “potential value” of improving practice.

Documenting Farmer Trainings

Prior to the action research intervention, report writing was restricted to documenting large farmer training events. Furthermore, only P-LWM and P-NFE prepared the reports.

Following the action research intervention, my co-researcher and I started to receive reports from FFs on various CCAC capacity building activities facilitated at the field units at the end of September 2011. Initially, the FFs at Field Unit 2 kept individual journals of their interactions with farmers when visiting project sites, while the FFs at the other field unit drafted collective reports of their team's farmer training activities. In reviewing the individual journals and collective reports in early October 2011, we found that in the individual journals maintained by the FFs only one or two sentences were mentioned against each sub-head—objectives, materials used, objectives achieved, challenges, learning, and follow-up. On the other hand, the collective reports from Field Unit 1 provided more in-depth accounts of the farmer training activity and captured the team's reflections effectively.

From discussions with FFs and field officers of both units, we found that the FFs keeping individual journals were not discussing their field visit experiences and learning with their colleagues. The FOs, the FFs, my co-researcher and I felt that it would be more helpful for the FFs, as well as for the study, if the FFs collectively reflected on their farmer training activities and used the output of their collective reflection exercise to draft the training report. Thus, FFs of both teams drafted collective reports from October 2011 onwards. These reports proved to be a rich source of information for the study, while providing a very positive source of learning for the FFs.

అందరం పనిచేస్తున్నాం. Responsibilities పంచుకుంటున్నాం. Report framework ఉపయోగపడుతుంది.

-- Field Facilitator, Field Unit 1, Focus group discussion, October 2012, Post-intervention

All of us are writing. Responsibilities are shared. We find the report framework useful.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

ప్రతి కార్యక్రమానికి వ్రాయడం జరుగుతుంది. Planning objectives, roles and responsibilities, సాధించలేకపోయిన సవాళ్ళు, observation check list, learning, follow up.

-- Field Facilitators, Field Units 1 and 2, October 2012, Focus group discussion, Post-intervention

Reports are drafted for all trainings. (Report contents include) objectives, roles and responsibilities, backlogs, challenges, observation checklist, learning and follow-up.

-- Field Facilitators, Field Units 1 and 2, October 2012, Focus group discussion, Post-intervention

Achievements, backlogs, learning, and follow-up plans were documented in each report. FFs commented that report preparation helped them to reflect in a more organized manner on their work.

రిపోర్టు వ్రాయడం వలన మేము చేపట్టిన కార్యక్రమాన్ని తిరిగి చూసుకోవడానికి ఉపయోగపడుతుంది. మేము వ్రాసిన రిపోర్టు కార్యక్రమంలో నేర్చుకున్న విషయాలు ఇతరులతో పంచుకోవడానికి ఉపయోగపడతాయి. అంతేగాక రిపోర్టు ఇతరులకు మార్గదర్శకంగా ఉపయోగపడుతున్నాయి. రిపోర్టు తయారుచేసే నైపుణ్యం మెరుగుపడింది.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Report preparation is helping us to reflect on our work. Our reports help share our learning with others. Also, they serve as a guide to others. Report writing skills are improving.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

FFs noted that the reporting formats were more comprehensive than what they had previously used and that the information captured in the reports was useful to them in addressing issues arising from the training activities with farmers and in planning for future training activities. They also noted that the purpose and the content of the reports were useful to orient new recruits to the project.

Report writing skills పెంపొందించుకోగలుగుతున్నాము. Project కార్యక్రమాల ప్రగతిని document చేయడానికి వీలవుతుంది. Future reference మరియు స్థానిక సమస్యలపై అవగాహన. Future planning ఏ విధంగా చేయాలి. మార్గదర్శకంగా ఉంటుంది (చేయబోయే కార్యక్రమాలకు).

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Report writing skills have improved. Progress of project activities is being documented. They serve as a future reference. Assists in future planning. Serves as a model for future documentation.

-- Field Facilitator, Field Unit 1, Focus group discussion, October 2012, Post-intervention

అన్ని విషయాలు reportలో పొందుపరుస్తున్నాం. Report writing skills పెరిగినాయి. కొత్తగా చేరిన staffకు చేయడానికి ఉపయోగపడుతున్నాయి. అందరికీ అర్థము అయ్యేలా ఉన్నాయి. NGO documentation సక్రమంగా చేయడానికి ఉపయోగపడుతుంది. Futureలో review చేసి దానికి అనుగుణంగా plan చేసుకోవడానికి వీలైతావుంది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

All aspects are covered in the reports. Report writing skills have improved. They are useful in orienting new staff. Reports are understandable to all. The reports serve as documentation for the NGO. Serves

These quotes demonstrate that the reporting framework was of “immediate value” in documenting training outcomes. Also, excerpts from various reports strongly indicate that FFs referred to the previous report when planning for a follow-up training event. Thus, the reports served as a future reference and ensured continuity between training events. Additionally, collective documentation of farmer trainings led to improved teamwork and strengthening of their community of practice.

Factors Influencing FFs’ Collective Practices

The foregoing analysis indicates that FFs used collective planning, observing, reflecting, and documenting to design and implement farmer trainings. The use of these collective practices led to greater task clarity and role clarity amongst the FFs and also improved their planning and facilitation skills. Additionally, use of the collective practices ensured continuity between farmer trainings or meetings and communication with farmers. Further, collective practices strengthened team work and camaraderie amongst the FFs. Furthermore, use of the collective practices helped FFs find solutions to problems experienced in the implementation of training activities. Thus, collective practices contributed to improved practice for the FFs.

FFs in general were positive about their participation in the community of practice. When specifically asked in the post-intervention focus group discussions to identify constraints in continuing key elements of their community of practice for future planning, FFs reported that finding time and energy for collective planning reflecting and

documenting of farmer trainings was a challenge, because these activities were added to their existing workload:

ప్రత్యేకంగా ప్రణాళిక కోసము time కేటాయించాలి. పని ఒత్తిడి వలన ఒక్కోసారి ఇబ్బందిగా ఉంటుంది.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We have to specifically allot time to plan. Sometimes we find it difficult, because of work pressure.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

కార్యక్రమం అయిన వేంటనే చేయలేక పోతున్నాం పని ఒత్తిడి, సమయాభావం అలసట.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Sometimes we find it difficult to reflect immediately after the event because of work pressure, lack of time and fatigue.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Aside from the foregoing, FFs reported that documentation increased their workload. They acknowledged that writing reports was somewhat difficult, and not all FFs had adequate skills to do so, being more accustomed to sharing their experiences orally rather than in writing.

కొంత పనిభారం పెరిగింది. అందరికీ. Report result ఒకే విధంగా ఉండటంలేదు.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

There has been a slight increase in the workload. Quality of the reports is not consistent.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Documentation was not initially FFs' strength but they improved these skills over time. My co-researcher and I worked with them to develop a format to document the training outcomes. Also, we regularly provided them feedback on ways of improving their documentation skills. Aside from these, my co-researcher and I periodically shared examples with FFs of how their documentation was helpful in identifying strategies to improve their communication and work with farmers. For example, the idea of organizing a vision-building workshop for CCACs emerged as the baseline findings demonstrated the need to improve farmer ownership of data collection. Additionally, the project

management allocated funds to repair dysfunctional observation wells. Similarly, FFs had noted in their reports that CCAC office bearers were not adequately aware of their roles and responsibilities. Likewise, review of FFs' reports indicated that they needed specific technical assistance on non-formal education methods and ways of facilitating key project concepts, such as what is weather, climate, climate change, climate variability, factors causing climate change, and adaptation options. Accordingly, a Training of Trainers (ToT) workshop was organized for FFs of all field units in February 2012 to address these training needs of the FFs. Thus, the strategy of sharing with the study participants the positive outcomes of their collective practices not only for them but also for FFs in other field units infused in them a sense of pride and encouraged them to continue their efforts. FFs acknowledged the positives of documenting the training outcomes.

Likewise, when I requested that FFs share challenges in use of the observation checklist, FFs noted that they needed to improve their use of the observation checklist.

బాగుంది లేక చాలా బాగుంది అన్న feedback ఇస్తున్నాం. మెరుగు పరుచుకోవాలి లేక పర్వాలేదు అనేవాటికి టిక్ చేయాలంటే ఇబ్బంది పడుతున్నాం. Seniorsకి feedback ఇవ్వాలంటే ఇబ్బందిగా feel అవుతున్నాం.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We are marking our observations only in columns 'what was good' and 'what was very good'. We feel uncomfortable to mark in columns 'needs to be improved' or 'satisfactory'. We are uncomfortable giving feedback to seniors. -- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

అంశాల ఎదురుగా (✓) పెట్టేసి సరైన విశ్లేషణ చేయడంలేదు. ఎదుటి వ్యక్తి బాధపడతాడేమోనని సరైన assessment/feed back ఇవ్వడం లేదు. Feedback ఇవ్వడం కొంత ఇబ్బందిగా ఉంది. Checklist కొత్త వ్యక్తులకు ఇచ్చేముందు కొంత అవగాహన కల్పించాలి.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We are not properly discussing the observations. We hesitate to give effective feedback as we are concerned that it might upset our colleagues. We feel a little uncomfortable giving feedback. New staff needs to be oriented on use of observation checklist.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

The above observations of FFs' practices point to the need for surfacing implementation challenges periodically as a strategy to improve practice. As discussed earlier, FFs included the P-LWM, P-NFE, and VCs. The action research tried to facilitate an equitable work environment through the use of a common term—field facilitators—to describe all implementing staff in a field unit. Further, it provided an opportunity for VCs to take additional responsibilities and improve their skills. FFs in both field units said that they were open to feedback from their team members and that this had improved their facilitation skills. However, the above observations indicated that it was important for FFs to reflect not only on the trainings they implemented, but also on the implementation of their collective practices. Such discussions would periodically surface challenges in the community of practice and help them take corrective measures. This highlighted the importance of a work environment that is conducive for FFs to continue to practice collective planning, reflecting, and documenting in the design and implementation of farmer trainings.

Field Officers' support

FOs support was critical in ensuring continuity of FFs' collective practices. They encouraged the FFs to engage in collective planning and reflection. Additionally, FOs in both field units participated in the FFs' collective reflection and provided guidance to the FFs in preparation of the training reports. Further, they reviewed the feedback that my co-researcher and I provided to the FFs on the training reports and ensured that they were addressed in future reports. Thus, their leadership was critical for continuity of practice. FOs supported FFs' use of collective practices as they believed they had the “potential

value” to improve FFs’ training skills and thereby contribute to increased farmer participation.

Staff వ్యక్తిగత నైపుణ్యాలు గుర్తించడానికి ఉపయోగపడుతుంది. ఎవరికి ఏ బాధ్యతలు ఇవ్వాలో తెలుస్తుంది. ఎవరి నైపుణ్యాలు పెంచాలో తెలుస్తుంది.

-- Field Officer’s observation, September 2012, Researcher’s notes from visit to Field Unit 2

We are able to identify individual strengths of staff. Also, we are able assign responsibilities according individual’s abilities. We understand whose capacities need to be built.

-- Field Officer’s observation, September 2012, Researcher’s notes from visit to Field Unit 2

FOs shared that participating in the field visit reflection exercise helped them gain a perspective on how things went in the field and what kinds of support the FFs needed. Further, the field officers shared that the observation checklist helped them in identifying individual strengths, assigning responsibilities, and developing a capacity building plan for the FFs. They shared that they used these discussions to assist the FFs to develop follow-up plans—an “applied value”. FOs’ involvement helped FFs identify issues that needed to be brought to the attention of the project management in monthly planning and review meetings. Usefulness of the practices in field officers’ day-to-day project work was important for their buy-in.

Last year Octoberలోని ఒక visitలో నేను కూడా మీలో ఒకడిని అని ఏ సమస్య ఉన్నా నాతో చెప్పండి అన్నప్పుడు రైతు బ్రహ్మయ్య వాస్తవంగా data collectionలో ఉన్న విషయం చెప్పటంతో మీరు తర్వాత రైతుల భాగస్వామ్యం పెంచుటకు vision building exerciseను చేయించటంతో వారి role ప్రాముఖ్యతను గుర్తించారు. ఇప్పుడు మీతో చెప్పటం వలన ఏమైనా strategies మార్చుటకు అవకాశం ఉంటుందనే ఉద్దేశ్యంతో ఈ పై వాస్తవాలను మీకు బయట పెట్టినాము.

-- Field Officer’s observation, September 2012, Researcher’s notes from visit to Field Unit 2

During your (researcher’s) visit in October last year, you told the farmers that you were one amongst them and asked them to share your concerns. One of the farmers came forward and shared with you was candid about lack of ownership in the data collection process. Following that, you designed a vision building exercise, which has helped farmers recognize their roles and responsibilities and has led to increased farmer ownership. Therefore, we are being more open in sharing field realities as we believe you will work with us to develop alternative strategies.

-- Field Officer’s observation, September 2012, Researcher’s notes from visit to Field Unit 2

Eventually, FOs found the outputs of FFs' collective practice useful to report and document progress of work in the field unit.

FO review చేయడానికి, Directorకు explain చేయడానికి సులభంగా వీలవుతుంది (అజెండా వలన).

-- Field Officer's observation, October 2012, Researcher's notes from visit to Field Unit 1

It is easier for the Field Officer to review and to explain to the (Executive) Director.

-- Field Officer's observation, October 2012, Researcher's notes from visit to Field Unit 1

NGO documentation సక్రమంగా చేయడానికి ఉపయోగపడుతుంది. Auditorకు donorకు report తయారుచేయడానికి సులభంగా ఉంది. Futureలో review చేసి దానికి అనుగుణంగా plan చేసుకోవడానికి వీలైతావుంది.

-- Field Officer's observation, October 2012, Researcher's notes from visit to Field Unit 1

The reports serve as documentation for the NGO. Drafting progress reports to the donor and auditor has become easy. Serve as a future reference and for reviewing progress.

-- Field Officer's observation, October 2012, Researcher's notes from visit to Field Unit 1

Field officers also reported that FFs' documentation helped create greater institutional memory—a “potential value”. In order to arrive at that point however, FOs' support remained critical in mentoring FFs to continue with the documentation practice.

Conclusion

The discussions with FFs and our observations of their practices revealed that prior to the action research intervention there was no standard practice in place to collectively plan an activity, reflect on the particular experience, share issues or concerns, identify learning, strategize, and plan for follow-up. Lack of collective planning practices undermined teamwork and the development of a community of practice. Additionally, lack of reflection hindered systematic identification of backlogs, issues and constraints in implementation; discussions of lessons learned from implementation; and development of follow-up plans and strategies. Consequently, this undermined “dialogue” and “collective rhythm”, key principles for cultivating a community of practice. FFs summed up their collective practices following the action research intervention as follows:

గ్రామాలకు వెళ్ళే ముందు ప్రణాళి తయారుచేసుకుంటున్నాము. ఫీల్డ్ విజిట్‌లో గమనించవలసిన అంశాల పట్టికను పాటిస్తున్నాము. శిక్షణలో పెద్ద గ్రూపు చర్చ ద్వారా మెరుగు పరుచు కోవలసిన అంశాల గురించి చర్చించాము. శిక్షణా కార్యక్రమం సమీక్షించుకున్నప్పుడు అందులో బ్యాక్‌లాగ్ అంశాలను గుర్తించడం. అలాగే మెరుగుపరుచు కోవలసిన అంశాలను గుర్తించడం. బ్యాక్‌లాగ్ అంశాలను తర్వాత కార్యక్రమములో గతంలోని పొరపాట్లను తిరిగి పునరావృతం కాకుండా ప్రణాళిక చేసుకున్నాము. సమస్యలు / మెరుగు పరుచుకోవలసిన వాటిని తర్వాత సమావేశంలోకాని / శిక్షణా కార్యక్రమములోగాని అధికమించే విధంగా విధానాలు పాటించడం జరిగింది. సిబ్బంది ఫీల్డ్ విజిట్‌లో వ్యక్తిగతంగా సభ్యులను కలిసి శిక్షణా కార్యక్రమములకు సంబంధించిన విషయాల గురించి కొన్ని ప్రశ్నలు అడుగుట ద్వారా:

- సి.సి.ఎ.సి సభ్యులకు శిక్షణాకార్యక్రమముపై ఎంత వరకు నేర్చుకున్నారు తెలుసుకొనుట,
- ఫెసిలిటేటరు ఏయే అంశాలు మెరుగుపరుచుకోవాలో తెలుసుకోవచ్చు (ఫెసిలిటేషన్),
- సభ్యుల అవసరాలు గుర్తించడం మరియు అభిప్రాయ సేకరణ,
- ఏ అంశాలను ఏ పద్ధతిలో చెబితే అవగాహన ఎక్కువ కలుగుతుందో ఫీల్డ్ బ్యాక్ ద్వారా తెలుసుకోవచ్చు.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We prepare a plan before visiting the villages. We use an ‘observation checklist’ to observe our colleagues’ facilitation (and this provides an opportunity for peer review and feedback). In the training (towards the end before concluding), we facilitate a large group discussion that requests participants to comment on ‘what needs to be improved’ (and ‘ways of improving’ of the training). (We collectively reflect and review implementation of training activities). When reflecting on the training, we identify those activities that could not be accomplished and those that need to be improved. We take into consideration the back logs and suggestions for improving facilitation in our subsequent planning. (We document the training plan and implementation process). In the follow-up training activity, we make conscious efforts to address backlogs and issues that emerged in the previous meeting and improve the design of training activities taking into consideration the suggestions for improvement. Periodically, we collect feedback from (select) CCAC members on various training activities to seek their feedback.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

FFs reported that these collective practices led to greater clarity of roles and responsibilities in implementing farmer training activities, improved skills and enhanced teamwork. Collective planning, observing, and reflecting improved camaraderie amongst FFs. Additionally, reflecting and documenting of training activities led to continuity between training events. FOs’ support was invaluable in initiating and sustaining FFs’ collective practices. FOs supported FFs’ collective practices as they believed that the collective practices had the “potential value” to improve FFs’ training skills and practices and thereby increase farmer participation. Usefulness of the practices in field officers’ day-to-day project work was important for their buy-in.

Initially, FFs at Field Unit 2 kept individual journals while the FFs at Field Unit 2 drafted collective reports of their team's farmer training activities. However, it was found that FFs keeping individual journals were not engaging in collective reflections. On the other hand, collective reports of Field Unit 1 provided more in-depth accounts of the farmer training activities and captured team's reflections as FFs were engaging in collective practices. So, FFs in both field units were encouraged to draft collective reports from October 2011. Following this, FFs' practices in both field units were similar, and no major differences were observed in the initial outcomes on their communities of practice. This was possibly due to fact that the research data analyzed for the study was for a period of only one year. Aside from this, more on-site observations of FFs' practices could possibly have yielded data on nuanced differences in their practices and outcomes.

Farmers' and FFs' Perceptions on the Impact of Project Interventions

Between September 2011 and October 2012 FFs implemented a series of capacity building activities²⁴ to build the institutional strength of CCACs, increase their awareness of the concepts of climate change and variability and the need to adapt to climate variability. FFs practiced collective planning, observing, reflection, and documentation in designing and implementing these activities. Following is the analysis of farmers' and FFs' perceptions on the impact of these interventions.

²⁴ Vision Building Exercise, Orientation on Roles and Responsibilities, Formation of CCAC Sub-Committees, Participatory Climate Monitoring (PCM), and Sustainable Land and Water Management (SLWM) pilots

CCAC Vision Building Exercise and Action Plan 2012

After reflecting on the baseline findings that farmers' interest in data collection was declining and farmer institutions were observed as being passive in addressing maintenance issues of data collection equipment and deepening of wells in their hydrological units, my co-researcher and I brainstormed ways to increase farmer ownership and strengthen farmer institutions. We felt that an appreciative inquiry process could be used to develop a vision and action plan for HU-CCACs. When we shared this with the FOs and FFs, they, too, felt that doing a vision building exercise with the CCACs and developing an action plan based on the vision could reinvigorate the CCACs. Accordingly, three workshops were organized in November and December 2011 at each field unit to cover all habitation-level CCACs in the particular field unit.

FFs sought the farmer participants' feedback a few weeks after the implementation of the Vision Building Exercise. The farmer participants reported that the outputs of the vision building exercise would be beneficial to the functioning of the CCACs.

విజన్ బిల్డింగ్ డాక్యుమెంట్ చేసిన దానివలన దృష్టి దానిపై ఉంటుంది. దానికి తగ్గట్టు పనులు ఏర్పాటు చేసుకోవచ్చు.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

Preparing a vision document will help us stay focused. Activities can be prepared in accordance with it. -- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

స్పాక్ కార్యక్రమాలు మూడు సంవత్సరాలలో ఏమేమి చేయాలో అర్థం అవుతుంది.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

We understand what needs to be achieved at the end of three years in the SPACC project.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

మన దృష్టి మనం ఏమి సాధించాలి అనే దానిపై ఉంటుంది.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

It will help us stay focused on our goal.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

జి.యమ్.సి సాధించిన విజయాలు గుర్తుచేసుకొని స్పాక్ కార్యక్రమాలు పుస్తక రూపంలో ఉండటం వల్ల ప్రతి సభ్యునికి అవగాహన ఉంటుంది. -- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

Documenting our successes (in the APFAMGS project) and vision of the new project will improve the awareness of all of our members (when reconfiguring GMCs/HUNs as CCACs, the membership was expanded to include representation from other vulnerable groups).

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

ప్రణాళిక బద్ధంగా పనులు చేసుకోవచ్చు. సభ్యులు ఒక పట్టుదలతో పనిచేస్తారు. సంఘము రెజిస్ట్రేషన్ చేసిన మాదిరి ఫీలింగ్ (కలుగుతుంది). లక్ష్యము సాధించడానికి అనువైన కార్యక్రమాలు రూపకల్పన చేసుకోవచ్చు. మనము చేసే కార్యక్రమాలు, లక్ష్యము చేరువులో ఉన్నాయో లేదో (లక్ష్యానికి చేరువలో ఉన్నామో లేదో) చూసుకోవచ్చు.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

We will be able to implement plans in accordance with the plan. Members will work with a sense of determination/direction. We feel exhilarated, as if we have registered a new organization. We can design activities in accordance with the goal. We can review our activities to see if they align with our goals.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

సంఘాలు బలోపేతం అవుతాయి.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

This helps strengthen groups (CCACs)

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

విజన్ డాక్యుమెంట్ చేయడం వల్ల భవిష్యత్తు తరాలకు మోడల్ గా ఉంటుంది.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

The vision document that we have developed will serve as a model for future generations.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

Farmer participants also shared that the vision building exercise helped improve members' awareness of past achievements.

సభ్యులకు పాత విషయాలపై (జి.యమ్.సి లో జరిగినవి) అవగాహన పెంపొందించినారు. ఇతర గ్రామాల వారితో మాట్లాడినపుడు వారి గ్రామాలలో జరిగిన కార్యక్రమాలు చర్చించడం జరుగుతుంది.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

Members' awareness on past activities has increased. In our discussions with farmers from other villages, we have learned about the accomplishments in their villages as well.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

గతంలో జరిగిన మంచి కార్యక్రమాలు స్ఫూర్తిగా (తీసుకొని) మంచిగా జరగని కార్యక్రమాలను (కార్యక్రమాలలోని) పొరపాట్లను మెరుగుపరుచుకోవడాని వీలవుతుంది.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

Reflecting on our accomplishments and failures in the past, we can explore ways to overcome our shortcomings.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

గ్రూపుల ద్వారా మాట్లాడుకోవడం వలన వారివారి గ్రామాలలో పరిస్థితులు ఎలా ఉన్నాయో తెలుసుకోగలుగుతున్నాము.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

Small group discussions helped us develop an understanding of the progress in our neighboring villages as individual members shared the accomplishments in their villages.

-- Male Farmer, Field Unit 2, February 2012, CCAC members' feedback

గతంలో నేను జి.యమ్.సి లో సభ్యునిగా లేను. ఈ సమావేశంకు వచ్చి జి.యమ్.సి లో జరిగిన కార్యక్రమాలు తెలుసుకున్నాను.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

In the past, I was not a member of the GMC. By participating in this workshop, I was able to learn about the activities implemented by the GMC.

-- Male Farmer, Field Unit 1, February 2012, CCAC members' feedback

చిన్న గ్రూపు చర్చ చేయడం వలన అందరి అనుభవాలు పంచుకోవడం వీలవుతుంది.

-- Female Farmer, Field Unit 1, February 2012, CCAC members' feedback

Small group discussions gave an opportunity for all to share their experiences.

-- Female Farmer, Field Unit 1, February 2012, CCAC members' feedback

The vision building exercise had an “immediate value” as it increased members’ awareness. Additionally, the vision had an “applied value” as it helped them stay focused and plan accordingly to accomplish the project goals that had been discussed and clarified through the exercise. Farmer participants used the vision document to develop an action plan for 2012.

ఏదైనా ఒక కాలం ఉండాలి, ఒక టైమ్ లేకుంటే ఎట్లా అన్ని పనులు జరగాలంటే ముందు టైమ్ టేబుల్ అవసరం. ముఖ్యమైన విషయాలను అజెండాలో తప్పనిసరిగా ఉండేటట్లు చూసుకోవాలి. అందరు అజెండాపై అవగాహన పెంచుకోవాల్సి ఉన్నది.

-- Female Farmer, Field Unit 1, March 2012, CCAC members' feedback

We should have a timeline. A timetable/timeframe is necessary when we have to implement so many activities. This will help us ensure that important activities are on the agenda.

-- Female Farmer, Field Unit 1, March 2012, CCAC members' feedback

ఒక సంవత్సర ప్రణాళికలో నెలవారీగా ఏమి చేయాలో అర్థం అవుతుంది.

-- Male Farmer, Field Unit 1, March 2012, CCAC members' feedback

The yearly action plan helps us understand what we need to do each month.

-- Male Farmer, Field Unit 1, March 2012, CCAC members' feedback

అనుకున్న కార్యక్రమాలు నెలవారీగా చేశామా? లేదా? చూసుకోవడానికి ఉపయోగపడుతుంది.

-- Female Farmer, Field Unit 2, March 2012, CCAC members' feedback

It helps us monitor the progress of our work each month.

-- Female Farmer, Field Unit 2, March 2012, CCAC members' feedback

ఏయే నెలలలో ఏమి కార్యక్రమాలు చేయాలో వివరంగా ఉంది. సి.సి.ఎ.సి సభ్యులందరికీ అవగాహన ఉంటుంది.

-- Male Farmer, Field Unit 1, March 2012, CCAC members' feedback

The timeframe clearly specifies the activities that need to be done each month. All CCAC members will be aware and have a common understanding.

-- Male Farmer, Field Unit 1, March 2012, CCAC members' feedback

2012 కార్యాచరణ ప్రణాళిక రూపొందించడం వల్ల హన్స్థాయిలో కార్యక్రమాలు, విజయాలు మూల్యాంకనం చేయవచ్చు

-- Male Farmer, Field Unit 2, March 2012, CCAC members' feedback

Preparation of the 2012 action plan will help in evaluating progress of HUN activities.

-- Male Farmer, Field Unit 2, March 2012, CCAC members' feedback

Aside from facilitating common understanding, farmer participants shared that the action plan 2012 provided them an opportunity to discuss the activities that were planned in greater detail.

చేయబోయే పనుల గురించి ముందుగా చర్చించుకుంటాము. ఆ చర్చించిన విషయాలను మరలా విలేజ్ లెవల్ సి.సి.ఎ.సి లో చర్చిస్తాము, దాని ద్వారా హెచ్.యు లో చర్చించిన విషయాలు అందరికీ తెలుస్తాయి.

-- Male Farmer, Field Unit 2, March 2012, CCAC members' feedback

We discuss planned activities (in HU-CCAC). We share those discussions at the village level CCAC. This process ensures that all are adequately informed of the discussions in the HU-CCAC.

-- Male Farmer, Field Unit 2, March 2012, CCAC members' feedback

అజెండా ముందుగా తెలుసుకోవడం వలన పనులు చేసుకోవడం సులభతరమవుతుంది. అంజెండా తెలిస్తే, ఇంకా చర్చించే అంశాలు ఉంటే దానిలో పొందుపరిచి చర్చించడానికి వీలవుతుంది. అజెండా మన ప్రగతి ప్రణాళికగా పని చేస్తుంది.

-- Female Farmer, Field Unit 2, March 2012, CCAC members' feedback

Knowing the agenda ahead of time will be helpful in implementation. If we know the agenda ahead of time, we can always make additions to it and discuss them. Agenda helps us move forward.

-- Female Farmer, Field Unit 2, March 2012, CCAC members' feedback

కమిటీ సభ్యులకు వారి బాధ్యతలపై పూర్తి అవగాహన వస్తుంది. కమిటీ సభ్యులు ఎవరి బాధ్యతలు వారు నిర్వహించడం వలన మంచి ఫలితాలు వస్తాయి. సభ్యుల మధ్య సంబంధ-బాంధవ్యాలు పెరుగుతాయి.

-- Female Farmer, Field Unit 1, March 2012, CCAC members' feedback

Committee members will know their responsibilities. When committee members discharge their duties, we will have better results. Relations between members will improve.

-- Female Farmer, Field Unit 1, March 2012, CCAC members' feedback

Female farmer participants shared that in their Self Help Groups, they, too, shared the meeting agenda in advance and updated members at the habitation level of the

meeting proceedings and decisions reached at the cluster-level meeting. From the responses, one can conclude that the HU-level Action Plan 2012 had a “potential value” as it clearly specified the activities to be accomplished each month and thus served as a tool to monitor and review progress. From the responses, I hypothesize that the HU-level action plan 2012 sowed the seeds of a community of practice (Wenger E. , 2006) amongst the CCAC members. The action plan that they developed pointed to greater self-direction and provided much needed internal motivation (Knowles, 1978). Further, it appears to have contributed to further development of the self-esteem of the farmer participants. Thus, engaging members in developing action plans increased their ‘power of life’ to sustain interest in the CCACs activities (McClusky, 1963). The process empowered and increased ownership amongst farmer participants.

FFs reported that following the vision building workshop, farmer volunteers showed increased initiative in the upkeep of the Participatory Climate Monitoring²⁵ (PCM) stations and data collection. Additionally, participation of women farmers in CCAC meetings and activities had improved.

విజన్ బిల్డింగ్ వర్క్‌షాప్‌లో పాల్గొన్న తర్వాత ఒక farmer volunteer బాధ్యతను గుర్తించి తన పల్లెలో వర్షపాత కేంద్రాన్ని శుభ్రపరిచి వాలంటీరుగా కొలతలు తీస్తానని ముందుకు వచ్చి 3 సంవత్సరాలుగా రాని rainfall dataను క్రమం తప్పకుండా తీయడం సంతృప్తి.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

After participating in the vision building workshop, a male farmer volunteer took the initiative to clean the rain gauge station in his habitation and record rainfall data regularly. Prior to this, rainfall data was not collected at this rain gauge station for three years.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

వాలంటీరు వర్షపాత వివరాలు, కనిష్ట మరియు గరిష్ట ఉష్ణోగ్రతలు సరియైన సమయానికి డేటా తీయడం చాలా సంతృప్తి కలిగింది.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

²⁵ Participatory Climate Monitoring (PCM) refers to a set of activities carried out by farmers to monitor climate parameters. It involves recording of rainfall, humidity, temperature, evaporation, wind velocity, wind direction and sunshine hours.

It is very satisfying to see that a male farmer volunteer from a particular habitation is collecting maximum and minimum temperatures aside from rainfall data.

-- Field Facilitator, Field Unit 2, September 2012, Focus group discussion, Post-intervention

విజన్ బిల్డింగ్ workshop జరిగిన తర్వాత తదుపరి సమావేశాలకు మహిళలు హాజరుకావటం సంభవించింది. హన్ సమావేశాలకు, FCS శిక్షణలకు మహిళల హాజరు పెరగటం సంభవించింది. APFAMGS కార్యక్రమాలకు ఆ గ్రామాలనుంచి మహిళలు బయటకు వచ్చేవారు కాదు.

-- Field Facilitator, Field Unit 2, October 2012, Focus group discussion, Post-intervention

The attendance of women participants from a particular habitation has increased in HUN meetings, FCS and other trainings. Women farmers are participating regularly in the meetings. Prior to this, throughout the time of the APFAMGS project, women from those villages never attended meetings outside the village.

-- Field Facilitator, Field Unit 2, October 2012, Focus group discussion, Post-intervention

కొన్ని పల్లెల్లో మహిళలు ఇంటినుండి సమావేశాలకు బయటకు వచ్చేవారు కాదు. అయితే వాతావరణ బడి మరియు CCAC సమావేశాలకు వారు హాజరవుడం సంభవించి ఉంది. ఒక మహిళను హైదరాబాదులో జరిగిన FCS-TOT శిక్షణకు CRPగా ఒప్పించి హాజరుపరచడం సంభవించి ఉంది.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Women from a few habitations were not participating in meetings outside their village. We are now pleased that they are participating in the FCS sessions and CCAC meetings. One woman farmer came forward to be the FCS Community Resource Person and participated in the FCS ToT. (She is now facilitating FCS sessions.).

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

In addition to the “immediate”, “applied” and “potential” value, the vision building exercise led to a “realized” value of improved farmer participation and ownership in data collection. These initial outcomes signified increased farmer ownership of the process. This could have been because the vision building exercise invigorated the farmers to take more ownership. Also, these responses indicated that farmers were able to perceive the relevance of the data in making decisions on crop plans. From the above, I hypothesize that engaging farmers in reflection exercises and developing follow-up action plans seemed to be effective strategies to improving their participation in CCAC activities and increasing their ownership of those institutions. Also, sustained engagement and reflective processes that used appreciative inquiry techniques motivated individual farmers and farmer groups to take meaningful action.

Roles and Responsibilities of CCAC Members

From the FFs reports and our observations during visits to project sites in November and December 2011, my co-researcher and I noticed that the roles and responsibilities of the CCAC office bearers were generic. The FFs and the researchers both felt that aligning roles and responsibilities of the CCAC office bearers with the vision and activities of the CCAC would ensure accountability of the CCAC office bearers and improve the functioning of the CCACs. Accordingly, we revised the roles and responsibilities of CCAC office bearers. FFs used the revised roles and responsibilities to orient CCAC members to improve their awareness in March and April 2012.

Farmer participants shared that aligning roles and responsibilities of office bearers with goals and objectives of the CCAC had led to greater clarity and more appropriate implementation of activities.

సభ్యులకు విధులు - బాధ్యతలు పెట్టడం వల్ల వారివారి బాధ్యత ప్రకారం కార్యక్రమాలు జరుగుతాయి (జరుపుతారు). (ఎవరి బాధ్యతలను వారు) తప్పని సరిగా నిర్వహిస్తారు.

-- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

Assigning roles and responsibilities to office bearer would ensure implementation of activities accordingly. Each will definitely carry out their responsibilities.

-- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

ఒక్కొక్కరు కొన్ని బాధ్యతలు పంచుకొనుట వలన మంచి ఫలితం వస్తుంది. పనులు చేయుటకు ఉత్సాహం ఉంటుంది. దానిపైన పట్టుదల నైపుణ్యము వస్తుంది.

-- Female Farmer, Field Unit 1, May 2012, CCAC members' feedback

Sharing of responsibilities will give good results. There will be more enthusiasm to do the work. It will lead to more commitment and skill development.

-- Female Farmer, Field Unit 1, May 2012, CCAC members' feedback

కమిటీ సభ్యులు వారి బాధ్యతలు వారు తెలుసుకొని నిర్వహిస్తే కార్యక్రమాలు విజయవంతంగా జరుగుతాయి. కమిటీ సభ్యులు నాకు ఉన్న బాధ్యత నేను నిర్వహించకపోతే సమావేశంలో ప్రశ్నిస్తారు అనే ఆలోచనతో కూడా పనిచేస్తారు. కమిటీ సభ్యులు అందరూ వారి బాధ్యత నిర్వహిస్తే ఒకరి మధ్య ఒకరికి తారమ్యాలు, బేధాభిప్రాయాలు తలెత్తవు. సి.సి.ఎసి

సమావేశాలు సక్రమంగా జరుగుతాయి. సరి అయిన నిర్ణయాలు తీసుకొని అమలు పరచడానికి వీలవుతుంది (కమిటీ సభ్యులు అందరు వారి బాధ్యతలు నిర్వహిస్తే).

-- Female Farmer, Field Unit 1, May 2012, CCAC members' feedback

We can successfully implement the activities when committee members are aware of their responsibilities and work accordingly. Committee members will be conscious that they will have to answer in the meetings, if they do not discharge their responsibilities. If committee members were to carry out their responsibilities, there would be no differences and misunderstandings. CCAC meetings will take place properly. And we can take proper decisions and implement accordingly.

-- Female Farmer, Field Unit 1, May 2012, CCAC members' feedback

సభ్యులు వారి బాధ్యతలు నిర్వహిస్తే సమావేశాలు సక్రమంగా జరుగుతాయి. సభ్యులందరికీ (సభ్యులందరి మధ్య) ఏకభావం, సమన్వయం ఏర్పడుతుంది. (సభ్యులు) వారి బాధ్యత వారు గుర్తెరిగి వారి పనులు (పనులను) వారు (సక్రమంగా) నిర్వహిస్తారు. -- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

Meetings will take place effectively, if members were to discharge their responsibilities properly. It will lead to unity and coordination. They will be aware of their responsibilities and discharge them effectively. -- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

బాధ్యతలు అనేవి ఉంటేనే కదా, వారు వాళ్ళ బాధ్యత అని తెలుసుకొని చేసేది. ఉండటం మంచిది. ఎక్కువ ఏముందిలే చెయ్యాలేగాని. -- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

It is only when we have responsibilities, that we will be aware of them. It will be good to have them. It is not much if one only wishes to do (something).

-- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

కమిటీ సభ్యులందరికీ గుర్తింపు ఉంటుంది. ప్రజలలో గౌరవము పెరుగుతుంది. పనులు పంచుకోవడం వలన కార్యక్రమము సజావుగా జరుగును. -- Female Farmer, Field Unit 1, May 2012, CCAC members' feedback

Committee members will get recognition. People will respect them more. The division of responsibilities will ensure smooth implementation of the program.

-- Female Farmer, Field Unit 1, May 2012, CCAC members' feedback

కమిటీ సభ్యుల విధులు-బాధ్యతలు చార్టుపై రాసుకొని సి.సి.ఎ.సి వద్ద ఉంచితే ప్రతి నెలసరి సమావేశం (సమావేశంలో) గుర్తు చేసుకుంటారు. -- Male Farmer, Field Unit 1, May 2012, CCAC members' feedback

If the office bearers' roles and responsibilities are displayed on a chart in the CCAC Office, it can serve as a reminder in the monthly meetings.

-- Male Farmer, Field Unit 1, May 2012, CCAC members' feedback

ఇతర సంఘాలకు కూడా మార్గదర్శకంగా ఉంటారు.

-- Male Farmer, Field Unit 1, May 2012, CCAC members' feedback

It would serve as a role model for other community groups as well.

-- Male Farmer, Field Unit 1, May 2012, CCAC members' feedback

Conventionally, office bearers' positions in community-based institutions (CBIs) are perceived as prestigious and bring social recognition to those individuals. Most

persons are interested in holding these positions as it helps them to consolidate their power (or influence) within the community and could further contribute to their political growth. However, accountability in the CBIs is low. A review of roles and responsibilities of office bearers of various CBIs showed that roles and responsibilities of key office bearers were often described in general terms and not specific to the institutions goals and objectives. This may have been the reason why GMCs and HUNs failed to monitor data collection and dissemination. After the orientation on roles and responsibilities, farmer participants in the CCACs recognized their specific responsibilities²⁶ and could identify their particular responsibilities in data collection and dissemination. Further, the differentiation of the roles and responsibilities helped ensure that one or two individuals were not burdened with the entire workload. FFs reported that this convergence between institutional goals and office bearers' roles and responsibilities had contributed to the "realized value" of office bearers becoming more proactive in the transaction of the day-to-day business of the CCAC.

పదాధికారులు (ప్రెసిడెంట్, వైస్ ప్రెసిడెంట్, సెక్రటరీ మరియు కోశాధికారి) వారి బాధ్యతలను గుర్తించి హన్ సమావేశాలలో FCS శిక్షణలలో గ్రామస్థాయి సమావేశాలలో చురుకుగా మాట్లాడడం, ఆలోచనలు పంచుకోవడం, సిబ్బందికి సహకరించడం. -- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

The office bearers (President, Vice President, Secretary and Joint Secretary) have recognized their responsibilities and are participating more actively in HUN meetings, FCS sessions, trainings, and other meetings. They are more forthcoming in speaking, sharing their thoughts, and cooperating with FFs. -- Male Farmer, Field Unit 2, May 2012, CCAC members' feedback

As discussed earlier, this also ensured regular data collection and dissemination on key climate parameters, which was critical for farmers to make informed decisions on their crops. This showed a marked improvement in ownership of farmers' institutions involved in the project.

²⁶ Farmer participants were either office bearers at the village level or Hydrological Unit level.

CCAC Sub-committees

The office bearers of the HU-level CCACs met once every quarter to review progress and to plan for the next quarter. The office bearers followed up on the decisions made and action plans prepared in the meeting. On our (my co-researcher and my) visits to women's Self Help Groups (SHGs) in another project, we learned about the usefulness of the sub-committees in following up on decisions made at the organization level and in day-to-day monitoring of key activities. We shared our observations and learning with the FFs and requested that they discuss the usefulness of sub-committees with CCAC members. Following the positive response of the CCAC members, FFs worked with the HU-CCAC to form sub-committees in May and June 2012. Each sub-committee had three or more members drawn from the executive members of the HU-CCAC.

Sub-committees were formed to reduce the burden of the HU-CCAC. Farmer participants felt that the sub-committees ensured more effective monitoring and quicker flow of information on specific activities to the HU-CCAC, as it was easier for a smaller number of CCAC members to meet.

ఒక్కొక్క పని ఒక్కొక్క కమిటీ చేసేదానివలన పట్టుదల, బాధ్యత ఉంటుంది. పనులు పంచుకొనుట వలన ఫలితము బాగుంటుంది. -- Female Farmer, Field Unit 2, August 2012, CCAC members' feedback

Creating a sub-committee for each of the tasks will improve responsibility and commitment. Sharing of work will lead to better results.

-- Female Farmer, Field Unit 2, August 2012, CCAC members' feedback

(సబ్ కమిటీలు) ఎందుకంటే తక్కువ బాధ్యతలు ఉంటాయి కనుక సక్రమంగా పనులు జరిగే అవకాశం ఉంది. అందరము ఒకే టైమ్ లో సమకూరలేము తక్కువ మంది (సబ్ కమిటీలు) ఉండటం వలన తక్కువ టైమ్ లో కలసి పని సక్రమంగా అయ్యేటట్లు చూడవచ్చు. -- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

Creating sub-committees will reduce the burden and therefore ensure effective implementation. All of us cannot assemble at the same time. It will be easier to for a small group of people to gather at short notice and monitor the work effectively.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

CCAC స్థాయి కమిటీకి సహాయంగా చిన్న కమిటీలు పెట్టడం వల్ల మంచి సమాచారం వస్తుంది. హాన్ CCACకి పర్యవేక్షించడం సులభమవుతుంది.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

Creating sub-committees to assist the CCAC will produce quality information/data. And it will be easier for the HU-CCAC to monitor.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

PCM, వాతావరణ బడులకు ఉపసంఘాలు చేయడం వలన సమాచారం త్వరగా అందుతుంది. ఆయా సంఘాల వారు బాధ్యత వహిస్తారు. ఉపసంఘాల వలన ఉపయోగం ఎక్కువే ఉంది (అని) చెప్పవచ్చును.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

Creating sub-committees on PCM and FCS will ensure quick flow of information. They will take responsibility. I feel sub-committees will be quite useful.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

చాలా ఉపయోగమున్నది. పదాధికారులకు కొన్ని పనులు తగ్గుతాయి.

-- Male Farmer, Field Unit 2, August 2012, CCAC members' feedback

Very useful. Will lessen the workload of the office bearers.

-- Male Farmer, Field Unit 2, August 2012, CCAC members' feedback

మనం మాట్లాడుకొన్న విషయాలు పదేపదే గుర్తు చేసుకోవడం, కమిటీ సమావేశములో హాజరుకాని సభ్యులకు ఉపకమిటీల ద్వారా అవగాహన కల్పించవచ్చు. పోటీతత్వము వస్తుంది.

-- Female Farmer, Field Unit 1, August 2012, CCAC members' feedback

Sub-committees can update members on the developments, especially those who cannot make it to the meetings. It will increase competition.

-- Female Farmer, Field Unit 1, August 2012, CCAC members' feedback

పర్యవేక్షణ చేసి సలహాలు ఇస్తారు.

-- Female Farmer, Field Unit 2, August 2012, CCAC members' feedback

They will monitor and give suggestions.

-- Female Farmer, Field Unit 2, August 2012, CCAC members' feedback

Farmer participants expressed that sub-committee members recognized—

“potential value”—their importance, monitored the work assigned to them and brought to the attention of the HU-CCAC Executive Committee problems and issues in implementation. This helped the HU-CCAC members to deliberate and make decisions for effective implementation.

Other Project Interventions

Other project interventions that were implemented alongside the above trainings included: Participatory Climate Monitoring (PCM), Sustainable Land and Water Management (SLWM) pilots, and Farmers Climate Schools (FCS). These interventions were initiated in June 2012 and continued beyond the duration of the study.

In general, farmers felt that these interventions improved their awareness on climate change/variability and strengthened their capacity to adapt to the climate change/variability.

నెలవారీ సమావేశాలు, వాతావరణ బడులలో వాతావరణ మార్పుల గురించి తెలుసుకున్నాము.

-- Male Farmer, Field Unit 2, August 2012, CCAC members' feedback

We learned about climate change from participating in the monthly meetings (habitation level-CCACs) and Farmer Climate Schools (FCS).

-- Male Farmer, Field Unit 2, August 2012, CCAC members' feedback

వాతావరణాన్ని కొలిచే విధానం బాగుంది. అందులో గాలిలో తేమశాతం, నీటిఆవిరి, ఉష్ణోగ్రత మరియు ఎండ తీవ్రత వంటివి మాకు బాగా నచ్చాయి.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

Ways of measuring weather parameters are interesting. We particularly like measuring humidity, temperatures, and intensity of sunshine.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

వాతావరణ పర్యవేక్షణ కేంద్రాలు ఏర్పాటు చేయడం వంటి బాధ్యతను మాకు అప్పగించటం మాకు బాగా నచ్చింది. ఎందుకంటే ఈ పనిని ఏ శాస్త్రజ్ఞులలో లేదా ఏ ఆఫీసర్స్ చేసేపని అనే భావన మాలో ఉండేది. అయితే వాటి నిర్వహణ మాకు అప్పగించడం చాలా సంతోషదాయకం ఎందుకనగా రోజువారీ వర్షపాతం ఎంత, గాలివేగం ఎంత, గాలి ఏదిశలో పోతుంది మరియు ఎండ తీవ్రత ఎంత ఉన్నది వంటి శాస్త్రీయ విషయాలను మేమే తెలుసుకొని ప్రాజెక్టుకు నివేదిక అందించడం అనేది మాకు సంతృప్తినిచ్చింది.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

We very much appreciate establishing PCM stations and entrusting their maintenance to us. We are now doing what we imagined only scientists and officers could do. It is very satisfying for us to measure the various weather parameters and provide the data to the project.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

శాస్త్రీయ పరమైన అంశాలను మాగ్రామాలలో మా ఆధ్వర్యంలో ఏర్పాటు చేయడం. వాటికి సంబంధించిన డేటాను సేకరించడం, వాటిని మేమే బాధ్యతతో యాజమాన్యం చేయడం మాకు చాలా సంతృప్తినిచ్చింది. వాతావరణం గురించి TVలో, పేపర్లు (దినపత్రిక) లలో చూచేవారము, చదివేవారము, తుఫాను హెచ్చరికలు మరియు వర్షపాత సూచనలు

వంటవి. అయితే ప్రస్తుతం వాతావరణ అంశాలు అన్నియు మా పరివాహక ప్రాంతంలో మేము నిర్వహించడం వలన వాతావరణంపై అవగాహన కలుగుతున్నది. ఇది మాకు చాలా సంతృప్తినిచ్చిన అంశము.

-- Male Farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

FFs established PCM stations in consultation with us. Collection of PCM data by farmers and management of PCM stations by farmers is very satisfying. We used to learn about weather forecasts from television and newspapers. Presently, we are monitoring the PCM stations and collecting data. Through this we are developing a perspective on weather. This is very satisfying to us.

-- Male Farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

మల్చింగ్, సేంద్రీయ ఎరువులు మరియు నూతన పరివంగడాలు వంటి వాటిపై రైతులలో మరియు ప్రజలలో పరిజ్ఞానాన్ని పెంపొందించడం సంతృప్తినిచ్చింది.

-- Female Farmer, Field Unit 2, Focus group discussion, September 2012, Post-intervention

We are pleased with the efforts to introduce techniques such as mulching, use of organic fertilizers, and new paddy varieties to improve farmer knowledge

-- Female Farmer, Field Unit 2, Focus group discussion, September 2012, Post-intervention

మనిషి ఆశావాద దృక్పథం కలిగిఉన్నాడు. 'ఒక చింతచెట్టుకు వందకాయలు ఉంటాయి. ఒకరాయి విసిరితే వందకాయలు రాలక పోయిన ఒక కాయ అయినా రాలుతుంది కదా' అనే భావనతో ఇటువంటిశిక్షణా కార్యక్రమాలలో కొన్ని విషయాలు నేర్చుకుంటే ఒక విషయమైన పనికొస్తుంది కదా అనేది సంతృప్తినిచ్చింది.

-- Male Farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

Humans are optimists. A tamarind tree has hundreds of fruit. When you throw a stone, at least one tamarind fruit will fall. We participate in trainings hoping that we would learn at least one new thing.

-- Male Farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

SLWM Pilots నిర్వహణలో పంటలు గురించి రైతుల అభిప్రాయాలను తెలుసుకోవడం చాలాబాగుంది. అదే విధంగా రైతులు పాటిస్తున్నటువంటి పద్ధతులను పంచుకోవడం కూడా బాగుంది. ... ఇందులో ముఖ్యమైన అంశం ఏమిటంటే రైతు పాటిస్తున్నటువంటి పద్ధతుల ద్వారా పండించిన పంటల దిగుబడులకు ఆదాయ వ్యయాలను విశ్లేషించుకోవాలని అనుకుంటున్నాము. అదే విధంగా ప్రాజెక్టు సూచన మేరకు నిర్వహిస్తున్న పొలాలలో పట్టిన ఖర్చు, ఆదాయం మరియు దిగుబడి రెండింటిని (pilots మరియు control plats) లో గమనించి విశ్లేషించుకొనివిధిమంచిది, ఏదిఉపయోగపడేదని వంటి విషయాలు తెలుసుకోవడం (రెండు ప్లాట్సు ఒకేచోట ఉండడం మాకు చాలా ఉపయోగకరము).

-- Male farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

In the implementation of SLWM Pilots, we liked FFs asking farmers' opinions on which crops to experiment with and as well as asking farmers to share their practices. ... One important thing that we are learning is analyzing the income and expenditure of pilot and control plots and assessing (with farmers which one is most effective.

-- Male farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

Farmers responses that: 'they are now able to collect weather data, which they imagined only scientists and officers could do' and that 'data collection is helping them develop a perspective on weather' points to an increased sense of pride and ownership of the new interventions—an "applied value". Further, the above quotes demonstrate that

farmer participants “valued” the new knowledge and skills on climate monitoring and agricultural practices that they learned from participating in capacity building activities as these improved their agricultural practices—a “realized value”. This indicated that the interventions addressed the emergent needs of farmers in the project area (Knowles, 1978). Additionally, farmers stated that they were pleased that they were consulted when introducing these new interventions. This validates the positive impact of FFs' community of practice on their communication and work with farmers—a “realized value”.

Farmer participants also shared examples of how weather data helped them make informed decisions on pest control measures and irrigating crops.

నాతోటి రైతు ఒకడు టమోట పైరులో రసంపీల్చు పురుగు ఉన్నట్లు గమనించి, దగ్గరున్న టౌనుకు కెళ్ళి పురుగుమందు కొనేముందు నాకు ఫోన్ చేసినాడు. ‘రసంపీల్చు పురుగులకు ఏమందు కొనాలి’ అని. గత రెండు రోజులుగా సూర్యరశ్మి తక్కువగా ఉంది, రాబోయే రెండు రోజులలో కూడా ఎండతీవ్రత ఇంకా తగ్గే అవకాశం ఉన్నట్లు వార్తలలో విన్నాను. ఎండతీవ్రత తక్కువగా ఉంటే రసంపీల్చు పురుగుల ఉధృతి తగ్గే అవకాశం ఉంది. ఈ విషయం వాతావరణబడులలో తెలుసుకున్నాను. కాబట్టి నీవు పురుగుమందులు కొనే అవసరంలేదు అని నేను చెప్పినాను. వాయన పురుగుమందులు కొనలేదు. దీని ఫలితంగా వాయన ఖర్చు తగ్గింది.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

Observing infestation of sucking pest in his tomato crop, my friend went to the adjacent town to purchase pesticide. He called me to find out which pesticide is most effective.

I told him that, “it has been cloudy for the past two days and I heard in the news that it will remain the same for another two days. I learned in the Farmer Climate School that infestation of sucking pests reduces with reduction in the intensity of sunlight and temperatures. So, you don't need to purchase pesticide.” He did not purchase pesticide. As a result, his expenses came down.

-- Male Farmer, Field Unit 1, August 2012, CCAC members' feedback

నేను నా పొలంలో నీటిఆవిరి యంత్రం ద్వారా నీటిఆవిరి శాతాన్ని గమనించి విషయాన్ని తెలుసుకున్నాను ‘నీటి ఆవిరి ఎక్కువయితే పొలంలో తేమ తొందరగా ఆవిరయిపోతుంది’. దీనిని గమనించిన నేను పంటలకు ఎక్కువ తడులు పెట్టాలేమోనని ఆలోచించాను కాని బోరులో వచ్చే కొద్దిపాటి నీటిని స్ప్రింకర్ల మరియు డ్రిఫ్టుల ద్వారా పంటలకు తడులను అవసరం మేరకే అందించాను. నీటి వృధాను తగ్గించి పంట దిగుబడిని సాధించాను. దీని వలన నీటిఆవిరికి మరియు పంటలకు పెట్టే తడులకు మధ్య ఉన్న సంబంధాన్ని తెలుసుకున్నాను.

-- Female Farmer, Field Unit 2, February 2012, CCAC members' feedback

Observing the evaporimeter in my field I am able to understand that when evaporation is high, loss of soil moisture is greater in the field. Observing this, I felt that my crops needed more irrigation. But, the yield of my borewell is low. Therefore, I used sprinkler and drip to irrigate the standing crops. I got

good yields without using much water. I see a connection between the rate of evaporation and the number of irrigations that are needed for my crops.

-- Female Farmer, Field Unit 2, February 2012, CCAC members' feedback

Aside from gaining new knowledge and skills and the use of farmer-friendly methods, farmers were also pleased with concrete results that materialized from sustained efforts to sensitize the local community and policy makers. In the pre-intervention interviews farmer participants expressed helplessness to contain drilling of new borewells or further deepening of existing borewells in Field Unit 1. However, the collaborative efforts of the FFs of Field Unit 1 and the local CCAC during the implementation phase of the action research seemed to have yielded tangible results.

మా మండలంలో భూగర్భజలాలు 1000 అడుగులకు చేరాయి. కాబట్టి బోర్లు వేయరాదని GMC, CCAC మీటింగులలో చెబుతున్నారు గాని, రైతులు బోర్లు 1000 అడుగులు వేసి 25hp మోటర్లతో నీటిని తోడుతున్నారు. కాని, అవి చాలా కాలం పనిచేయడం లేదు. ఇటువంటి విషయాలపై field unit 1 staff మంచి పరిజ్ఞానం ఇచ్చింది. ప్రభుత్వం కూడా మా మండలాన్ని dark areaగా ప్రకటించారు. అప్పుడు రైతులు తెలుసుకొని పరిస్థితి ఆలోచించి బోర్లు వేయడం కొంత తగ్గించారు. దీని వలన రైతులు నష్టపోకుండా ఉన్నారు. ఈ విషయాలను శిక్షణా కార్యక్రమాలలో నిలకడ నీటిమట్టం, పంపింగ్ నీటిమట్టాల గురించి గోడలపైన డేటాని ప్రదర్శించడం, రైతులకు చెప్పడం, పరిస్థితిని విశ్లేషించడం వంటి విషయాలు సిబ్బంది ముందుగానే చెప్పడం చాలా సంతృప్తిని ఇచ్చింది.

-- Male Farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

In our mandal, water table levels have receded to more than 1000 feet. We have asked farmers not to deepen and drill new borewells in GMC and CCAC meetings. Even though, some farmers have drilled beyond 1000 feet and pumped water using 25 hp motors. However, the yield of the borewell was only for a short duration. Field unit 1 has encouraged farmers (GMCs) to display static and pumping water levels in the village square and disseminate these messages in crop-water budgeting workshops. The government has now recognized this and declared the particular mandal as a dark area—deepening or drilling of new borewells is prohibited.

-- Male Farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

Farmers acknowledged that the relevance of the training inputs and increased knowledge led to more informed decisions and improved practices, which resulted in reduction of input costs and increased yields.

Farmer participants' responses in general pointed to the “immediate”, “applied”, and “potential” value of the project interventions to strengthen their institutions and

improve agricultural practices. Additionally, farmers demonstrated an in-depth understanding of the content presented in the CCAC capacity building activities. This indicated that farmer participants were quite interested in the content and proceedings of the trainings. Also, this signified active participation on the part of the farmers and demonstrating their ability to use the training content to strengthen their institutions and improve agricultural practices. From this, one can infer that there was both relevance and immediacy of the content (Knowles, 1978). Aside from improving communication between FFs and farmer participants in training activities, FFs practicing collective planning, reflecting, and documenting in implementing training activities led to the “realized value” of improved farmers’ practices and further strengthened FFs’ community of practice.

Farmers’ Perceptions about Facilitation Methods

When reviewing FFs’ reflections and our observations during visits to both the field units, we found that FFs needed specific technical assistance on non-formal education methods and ways of facilitating key project concepts, such as what is weather, climate, climate change, climate variability, factors causing climate change, and adaptation options. Accordingly, my co-researcher and I designed and facilitated a Training of Trainer (ToT) workshop for the FFs in February 2012 to address their training needs. FFs then used the learning from this workshop and our inputs when implementing farmer trainings.

Farmers appreciated the use of non-formal education methods in the trainings as it helped to develop a better understanding of the concepts. Women participants, in

particular, stated that they liked small group discussions as it allowed them to share their experiences and views.

తెలియని విషయాలు శిక్షణా కార్యక్రమంలో బోర్ కొట్టకుండా అటలు, చిన్నగ్రూపు చర్చలు, పెద్దగ్రూపు చర్చలు, వాతావరణ కేంద్రాల సందర్శన, ప్రదర్శనవంటి వాటి ద్వారా శాస్త్రీయ పరమైన విషయాలు సులభంగా అర్థం అవుతున్నాయి. అర్థం చేసుకున్న వాటిని ఇతరులకు చెప్పగలుగుతున్నాము. ఇది చాల సంతృప్తిని ఇచ్చింది.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Games, small group discussions, large group discussions, exposure visits, and demonstrations are used in trainings to retain farmer attention when imparting technical information. We are able to easily understand these concepts and share it with other farmers. This is satisfying.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

శిక్షణా కార్యక్రమాలలో చెప్పదలుచుకున్న విషయాన్ని లేదా తెలుసుకోవలసిన విషయాలను 30 మందితో చర్చించకుండా చిన్న చిన్న గ్రూపులుగా సభ్యులను విభజించి, చిన్నగ్రూపులలో ప్రతి సభ్యుని అభిప్రాయాలు, అనుభవాలను పంచుకోవడానికి అవకాశం కలిగింది. దీనివలన మహిళలు తమ అనుభవాలు కూడా పంచుకోవడానికి మరియు మాట్లాడే (మాట్లాడటానికి) అవకాశం వచ్చింది. ఇటువంటి అవకాశాలు కలగడం మాకుచాలా సంతృప్తిని ఇచ్చింది.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Rather than share the information with all the participants in the large group (30 participants), FFs have encouraged us to discuss the information in small groups. This provides an opportunity for every participant to share their experiences and views. Women, too, had an opportunity to speak and share their experiences. This is very satisfying to us.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

మీరు ఇచ్చిన ప్రశ్నలకు జవాబులు చిన్నగ్రూపులో చర్చించి నేను వ్రాసి చదివి వినిపించడం మాకు అలా అవకాశాలు ఇవ్వడం మంచిగా అనిపించింది. నేను చదువుకున్న చదువు ఇలా ఉపయోగపడింది.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

I felt happy for the opportunity to document the discussion in my small group and present it to the large group. This opportunity helped me utilize the education that I have.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

From the above quotes, I conclude that inclusion of small group activities improved farmer participation—an “immediate value” for FFs from practicing collective planning, reflection, and documentation. Aside from that, opportunities to participate in small group discussions improved farmers’ confidence, particularly that of women, to speak in larger gatherings—a “realized value”.

ఏదైనా విషయాన్ని 30 మందితో ఒకేసారి చర్చిస్తే, ఆ విషయంపై అవగాహన, అనుభవం ఉన్న 2/3 వ్యక్తులు మాత్రమే మాట్లాడుతారు. కాని విషయంపై అందరి అభిప్రాయం, దృష్టికేంద్రీకరించి చర్చించడం, చిన్న గ్రూపులలో చేయడం చాలా బాగుంది. చిన్న గ్రూపులలో అందరికీ మాట్లాడే అవకాశం వచ్చింది. ముఖ్యంగా మహిళలు వారి అభిప్రాయాలు చెప్పడం జరుగుతున్నది బాగుంది. చిన్నగ్రూపులలో చర్చించిన విషయాలను పెద్ద గ్రూపులో చెబుతున్నప్పుడు మిగతా గ్రూపువారు

భిన్నంగా ఏమైనా చర్చించారా లేదా అనే విషయంపై అందరూ దృష్టి కేంద్రీకరించి శిక్షణలో అందరూ effectiverగా భాగస్వామ్యం వహించడమ జరుగుతున్నది.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

When you discuss a thing in a large group of 30 participants, only two or three participants speak. On the other hand, we like small group discussions as everyone gets an opportunity to share their experiences/ views and this leads to participation of all present. Everyone gets an opportunity to speak in small groups. Especially, women are getting an opportunity to share their views. When small group discussions are reported out in large group, members of other groups review them to see if new ideas or information is being shared. This creates a healthy competition amongst members and leads to effective participation in the trainings.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

గతంలో చాలా మీటింగులకు పిలిచారు (ప్రభుత్వ అధికారులు, పంచాయితీ సభ్యులు నామావేశాలకు హాజరైనాము కాని, మేము మాట్లాడిన రోజు ఒకటి కూడాలేదు) APFAMGS మరియు SPACC సమావేశాలలో ప్రతి సభ్యునికి విషయాల పై అవగాహన పెరిగింది. ఉదా: నీటిమట్టాలు కొలవడం, సేంద్రీయ వ్యవసాయ పద్ధతులు గురించి తెలుసుకోవడం, శీతోష్ణస్థితి పర్యవేక్షణ చేయడం, పంట-నీరు ప్రణాళికలో పాల్గొని ప్రస్తుత పరిస్థితిని విశ్లేషించి దానికి తగ్గట్టు నీటి యాజమాన్యం, పంట యాజమాన్యం పద్ధతులు పాటించడం ఇవన్నీ శిక్షణా కార్యక్రమాల ద్వారా సిబ్బంది విషయాలను తెలియజేయడం చాలా సంతృప్తిని ఇచ్చింది.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

In the past, I have attended several meetings organized by government departments and gram sabhas. However, I did not speak even once. In the APFAMGS and SPACC meetings, the awareness of all members has improved, for example on measuring water levels, sowing crops and using water saving practices taking into consideration the water balance, knowledge of organic agriculture practices, and monitoring weather. This is very satisfying.

-- Female Farmer, Field Unit 1, September 2012, Focus group discussion, Post-intervention

మహిళా సంఘాల మీటింగులకు ఇప్పటికీ చాలా వాటిలో మేము పాల్గొన్నాము. కాని, మా అభిప్రాయాలు, అనుభవాలను అక్కడ పంచుకునే అవకాశం చాలా తక్కువ ఎందుకంటే ప్రభుత్వాధికారులు చెప్పిన దానిని వినాలి, వారు చెప్పినదే చేయాలి. అది సాధ్యమే లేక అసాధ్యమే అని అడిగేవారు కారు. వారి పని అయిందా లేదా అనేదే వారికి ముఖ్యము. శిక్షణా కార్యక్రమాలలో వారు చేప్పేవారు, మేము వినేవారుము.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We have attended several women's group meetings. The opportunities to share our views and experiences are minimal as we have to listen to what the government officials say and follow their instructions. They never check whether it is feasible or not to follow their instructions. In trainings, they tell and we listen.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Farmers appreciated opportunities to share their experiences and views. Such opportunities were perceived as valuing their knowledge and experience—a key principle of andragogy (Knowles, 1978). Consequently, this practice improved farmers' motivation and thereby, reduced the load of life (McClusky, 1963).

చిన్నగ్రూపు చర్చలు, పెద్దగ్రూపు చర్చలు, నెలవారీ సమావేశాలు, HU సమావేశాలు వాతావరణ బడులు వంటి శిక్షణా కార్యక్రమాలలో పాల్గొనడం వలన మాకు (మహిళలకు) ధైర్యము వచ్చింది. మాకు తెలిసినంత వరకూ విషయాలను పంచుకోవడం జరుగుతున్నది. గుర్తింపు వచ్చింది. ఇది మాకు చాలా సంతోషాన్ని ఇచ్చింది.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Participation in small group discussions, large group discussions, monthly meetings, HU meetings, Farmer Climate Schools has improved our (women's) confidence. Also, sharing what we learned with others has brought us some recognition as well. This is very satisfying.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

శిక్షణా కార్యక్రమాలు, వర్క్ షాపులు, సమావేశాలకు క్రమంతప్పక వాతావరణ బడులకు హాజరుకావడం వలన పరివాహక ప్రాంతంలోని అందరితో సత్సంబంధాలు ఏర్పడ్డాయి. దీనివలన మాకు అవసరాలు ఏమైనా ఉంటే ఒకరినొకరు సహాయం చేసుకోవడం. ఈ కమిటీలు, శిక్షణా కార్యక్రమాలు ఒకరకంగా చాలా దోహదపడ్డాయి. చాలా సంతోషాన్ని ఇచ్చింది.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

We have developed good relations with farmers from other villages in the HU by participating in farmer trainings and meetings regularly. Consequently, we are able to help each other in times of need. The meetings and trainings have facilitated this.

-- Female Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

శాస్త్రీయ పరమైన అంశాలను మాగ్రామాలలో మా ఆధ్వర్యంలో ఏర్పాటు చేయడం. వాటికి సంబంధించిన డేటాను సేకరించడం, వాటిని మేమే బాధ్యతతో యాజమాన్యం చేయడం మాకు చాలా సంతోషాన్నిచ్చింది. వాతావరణం గురించి TVలలో, పేపర్లు (దినపత్రిక) లలో చూచేవారము, చదివేవారము, తుఫాను హెచ్చరికలు మరియు వర్షపాత సూచనలు వంటవి. అయితే ప్రస్తుతం వాతావరణ అంశాలు అన్నియు మా పరివాహక ప్రాంతంలో మేము నిర్వహించడం వలన వాతావరణంపై అవగాహన కలుగుతున్నది. ఇది మాకు చాలా సంతోషాన్నిచ్చిన అంశము.

-- Male Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

FFs established PCM stations in consultation with us. Collection of PCM data by farmers and management of PCM stations by farmers is very satisfying. We used to learn about weather forecasts from television and newspapers. Presently, we are monitoring the PCM stations and collecting data. Through this we are developing a perspective on weather. This is very satisfying to us.

-- Male Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Farmers said that they valued the training inputs. Further, they stated that they appreciated opportunities to share their experiences and views. Additionally, they valued the consultative process in making key decisions. As discussed earlier, they were particularly excited that the climate monitoring stations were brought to their doorstep and that they were assigned the responsibility of data collection and upkeep of stations that are usually done by 'technically qualified persons'. Also, they were able to use the data they collected to make informed decisions on crop management. From the above

discussion one can surmise that the training content and non-formal education processes used by the FFs made the farmers feel empowered. All this attested to the “realized value” of improved farmer participation.

Challenges to Farmers’ Communication and Ownership

Aside from FFs’ delivery of training, other factors influenced farmers’ communication and work with FFs and farmers’ ownership of groundwater management and weather monitoring. Some of these were documented in FFs’ reports and others surfaced when we asked FFs and farmers to identify challenges to farmers’ communication in trainings and ownership of project activities in the post-intervention focus group discussions.

Social factors: In the post-intervention discussions on factors constraining farmer participation in trainings, farmers shared that **social factors** constrained them from actively participating in the trainings. This situation appeared to be more challenging for women farmers.

శిక్షణా కార్యక్రమములో చెప్పదల్చుకున్న సూచనలను లేదా అభిప్రాయాలను ఒక్కొక్కరి చెప్పలేక పోవుచున్నాము ఎందుకంటే బిడియం ఎక్కువ, ఎవరన్నా ఏమనుకుంటారోనని బిడియం. మనకెందులే అని వెనకాల కూర్చునేది కొందరు. విషయ పరిజ్ఞానం ఉన్నా దానిని (అవగాహన కలిగి ఉన్న విషయాలను) నలుగురుకి అర్థమయ్యేరీతిలో చెప్పలేకపోతున్నారు. అదే కొంత అనుభవం ఉన్నట్లయితే మంచిగా చెప్పగలరు, మంచిగా ఆకట్టుకోగలరు.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We at times hold back from sharing our experiences, views, and opinions as we are nervous that others might misunderstand us. Even though some of us are knowledgeable, we hold back. Also, we feel shy as we think we may not be able to express ourselves well enough for others to understand. We tell ourselves, we could have shared well if we had more experience in public speaking.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

శిక్షణా కార్యక్రమాలలో మాగాళ్ళ (పురుషుల) ముందర మేము మాట్లాడాలంటే కొంత సిగ్గు, బిడియంతో విషయాలను / అభిప్రాయాలను చెప్పలేకపోతున్నాము. పల్లెల్లో పరిస్థితులు వేరుగా ఉంటాయి. మాకు ఇలా అందరితో మాట్లాడాలని ఆభిప్రాయం ఉంటుంది. కాని ఆ అవకాశాలు మాకు చాలా తక్కువగా వచ్చేవి. ఒకవేళ, ధైర్యంచేసి మాట్లాడితే అబ్బా, మాకు తెలియదా? అంతా ఈ అమ్మకు తెలిసినట్లు చెబుతుందనే విమర్శలు ఎదుర్కొంటున్నాము. ఆడాళ్ళకు మీటింగులా

అని విమర్శించే వారే ఎక్కువ, ప్రోత్సహించేవారు చాలా తక్కువ. అందుకే మీటింగుల్లోగాని, శిక్షణా కార్యక్రమాలలోగాని, మాట్లాడలేక పోవుచున్నాము.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We (women) feel shy and nervous about sharing our views and experiences in front of men folk in the workshop. The situation in the villages is different (more conservative). We like to share our views, but we get very few opportunities to speak. In case, we muster the courage to speak we may invite belittling comments like: “Don’t we know? She speaks as if she alone knows about this?” People who encourage are few, while those who ridicule are many. Therefore, we are not able to speak in meetings and workshops.

-- Female Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Overcoming social factors constraining participation required sustained use of methods that promoted farmer participation. Farmers’ responses on small group learning activities introduced by the FFs in farmer trainings indicated that they were effective strategies in helping farmers overcome their inhibitions and improve participation.

Multiple demands on farmers’ time: Instances of FFs consulting with farmers ahead of time to schedule the training events and changing training plans and facilitation methods to suit farmers’ needs were discussed earlier, in the section on FFs’ collective planning. FFs’ collective planning led to discussing field realities and farmer needs when planning and implementing activities accordingly. While collective planning led to development of realistic plans, multiple demands on farmers’ time continued to affect how farmers communicated in trainings.

విద్యుత్ సరఫరా క్రమంగా లేకపోవడం వలన సమావేశానికి వచ్చినప్పటి నుండి పూర్తిస్థాయిలో భాగస్వామ్యం వహించ లేకపోతున్నాము, కొంత సమయాన్ని దృష్టిని కేంద్రీకరించలేక పోతున్నాము.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

Despite attending training programs, we are not able to communicate effectively in the trainings because of irregular power supply. We are not able to stay focused.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

.... వాతావరణ బడికి హాజరవుతున్నాం, ఉన్న కొద్దిపాటి 2గం||లలో విషయాలను గబగబా మాట్లేడేసి వెళ్ళిపోతున్నాము కారణం విద్యుత్ కొరతవల్ల, కూలీల కొరత వల్ల కొన్ని విషయాలను చర్చించలేక ఇంకా విషదీకరించలేక పోతున్నాము.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

We attend the training. In the two hours that we have, we wish to discuss issues quickly and leave. The reasons that we have to leave are related to power outages and shortage of labor. Given this short duration of time, we are not able to fully discuss certain issues.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

These farmers concerns indicated that FFs needed to be conscious of these multiple demands on farmers' time and make a sustained efforts to structure the training content to focus on delivering core messages and adopt facilitation methods that kept farmers engaged without consuming too much of their time. Additionally, FFs' planning needed to take into account that they had to be prepared, when necessary, to make on the spot alterations in the content and facilitation methods in a training. Aside from helping FFs develop realistic plans, collective planning enhanced their preparedness to cope with on-the-spot challenges.

Transportation: Another issue that impacted farmer attendance and communication was transportation. While monthly meetings of village level CCACs were organized in the evenings, trainings and quarterly meetings of HU level institutions were conducted during the day to enable farmers from neighboring villages to participate in the training. Usually farmer trainings were organized at a village that was centrally located as it was convenient for farmers from surrounding habitations to gather there. However, some of the habitations were remote and regular transportation was not available. Therefore, farmers often found it difficult to reach the training venue on time.

Given that participants' habitations were located in different directions, only a few farmers could be accommodated each time in the jeep. Hiring of additional jeeps to mobilize farmers would increase the costs. Therefore, farmers who were picked up first usually waited for the rest of the farmer participants to gather. This waiting not only frustrated them, but increased their anxiety to get back to work. As a result, farmers were

unable to participate optimally in discussions. Though FFs believed improving transportation facilities would reduce farmer frustration and improve their communication in trainings, doing so was beyond the control of both FFs and farmers.

రవాణా సౌకర్యాలు లేకపోవడం వలన కొన్ని గ్రామాలు దూరంగా ఉండడం వలన సభ్యులను సమయానికి హాజరు పరచ లేకపోవడం. -- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Some of the habitations are far away and there is no transportation to these habitations, farmers from these habitations are late to the training.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

FCS సభ్యులు అనుకున్న సమయానికి హాజరుకాక పోవడంవలన ప్రణాళిక ప్రకారం సెషన్ నిర్వహించలేకపోవడం.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

The FCS sessions are not being implemented as planned because members are not coming /collecting on time. -- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

రైతులకు తగిన రవాణా సౌకర్యాలు కల్పించడం వలన రైతుల హాజరు పెంచవచ్చు.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Improving transportation facilities will increase farmer attendance.

-- Field Facilitator, Field Unit 1, October 2012, Focus group discussion, Post-intervention

With the support of FOs from other field units, the FOs of these two field units brought this to the attention of the project management and requested allocation of additional funds to hire additional transport to mobilize farmer participants to the trainings. The project management responded positively and additional funds for budgeted for transporting farmers to trainings in 2013. Thus, the FOs' role was critical in communicating these challenges to the project management and finding feasible solutions.

Foregone wages: Most farmers and their families are covered under the National Rural Employment Guarantee Scheme (NREGS), wherein they are provided gainful employment for 100 days in a year. As the daily wage fixed in NREGS is considerably higher compared to the labor rates prevailing in many rural areas, this has caused labor rates in rural areas to increase considerably. Consequently, the costs of farming have

gone up as well. Farmer participants felt that they lost daily wages from participating in the trainings and requested that they be compensated the daily wage for participating in the training.

మా ఇంట్లో భోంచేసి మీ ఇంట్లో పనిచేసినట్లు అనుసందంగా శిక్షణలో విషయాలు చేస్తున్నారు. మాకు అర్థమవుతున్నాయి కానీ ఆరోజు కూడా కూలీ రూ 400 నుండి 150 వరకు ఆదాయం కోల్పోతున్నాము. ఎందుకంటే మహిళలు సమావేశాలకు వెళితే అక్కడ ప్రాజెక్టు వారు వారికి కూలీ రూ 100/- చెల్లిస్తున్నారు. ఇందులో ఏముంది బొక్క శిక్షణ నుండి మాకు వచ్చే ఆర్థికలాభం శూన్యం.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

It appears that we are dining in our house and working in your house. We understand the content of the trainings. But, we are losing daily wages between Rs. 400 to Rs. 150. When women go to meetings, they get Rs. 100 towards wages. What is there in this for us, the financial gain from participation in the training is zero.

-- Male Farmer, Field Unit 2, September 2012, Focus group discussion, Post-intervention

వ్యవసాయ పనుల ఒత్తిడి వలన సమావేశాలకు మరియు శిక్షణలకు హాజరు (కావడం) కొంత కష్టంగా ఉంది. ఎందుకనగా ఒక కూలికి రోజుకు 250-300 రూపాయలు కూలి చెల్లిస్తున్నాము కాబట్టి ఆపనిని మేము చేసుంటే బాగుంటుంది కాదా! అనే అభిప్రాయం కొన్ని సందర్భాలలో ఎదురైనది. ఇటువంటి అభిప్రాయం 95% మందిలో ఉన్నమాట వాస్తవము.

-- Male Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Attending farmer training programs is sometimes difficult because of the pressure of agriculture work. We pay between Rs. 250 to Rs. 300 as daily wage to a laborer. At times we feel that we can save that money if we were to do that work by ourselves. Majority (95%) of us think way.

-- Male Farmer, Field Unit 1, Focus group discussion, October 2012, Post-intervention

ప్రాజెక్టు కార్యక్రమాలలో హాజరైన ప్రతి కార్యక్రమానికి ప్రతి సభ్యునికి కొంత ఆర్థిక సహాయం అందిస్తే భాగస్వామ్యం పెరుగుతుందని ఒక అధ్యక్షునిగా నాఅభిప్రాయం. ఎందుకంటే HU మీటింగ్‌లో చాలామంది సభ్యులు నన్ను ఈ విషయంపై ప్రాజెక్టు దృష్టికి తీసుకువెళ్ళి కొంతలో కొంతైనా పరిహారం అందేలా చూడాలని అభ్యర్థించారు. కాబట్టి ఈ సందర్భంలో నేను ఈ విషయాన్ని ప్రస్తావిస్తున్నాను.

-- Male Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

As a HUN president, I feel that farmer attendance and participation would improve if the project provided some financial compensation to farmers attending trainings. I am sharing this with you now as several farmers have raised this issue with me in the HU meetings and requested that I draw the attention of the project to this and secure at least some compensation (it appears that he is not convinced about it, but is representing the collective thinking of the farmers in committee).

-- Male Farmer, Field Unit 1, October 2012, Focus group discussion, Post-intervention

Farmer participants stated that they valued knowledge and skills gained from participation in trainings. At the same time, they looked for immediate financial gains. Several development projects in the general area where the study took place compensated

farmers with daily wages and provided transportation and food for participation in the meetings. Further, women members of the SHG groups were also compensated with daily wages, and provided transportation and food for participation in the meetings and trainings. Consequently, farmer participants felt that they should be financially compensated by the project for loss of their wages when participating in training events.

Compensating farmers for their participation undermines the principle that farmers participate in the trainings to learn useful information. In a scenario where various political parties and other interest groups mobilize farmers and daily wage laborers to participate in their meetings by compensating them their daily wages, it would be challenging to assess the relevance of training content to farmers' livelihoods if farmers were to be compensated for participating in trainings. An effective strategy should be three-pronged. First, synchronize training content to farmers' immediate needs so that farmers can perceive the immediate relevance of the training inputs. Secondly, use multiple dissemination strategies to give adequate publicity on the relevance of training content to farmers' livelihoods. Thirdly, fund training inputs (including participants' travel and food) rather than pay farmers to participate in trainings when introducing new technologies to rural communities. Once farmers experience the short-term benefits from new knowledge and skills gained in training, one might try to transition to a 'farmer-to-farmer' transmission of that knowledge and skills through field days, exposure visits, etc. to a mode of operation where farmers are encouraged to make small payment for participation in training activities. This would make training inputs demand-driven rather than supply-driven.

Conclusion

FFs' collective practices provided them an opportunity to surface challenges to farmer communication and work with FFs' and farmers' ownership of groundwater management and weather monitoring. Additionally, the discussions helped explore feasible solutions. Further, FFs' documentation helped in documenting the issues and strategies to overcome the issues. For example, FOs successfully negotiated with the project management for additional funds to undertake repairs of observation wells and rain gauge stations and cover farmer travel expenses to trainings and meetings. The initial outcomes of FFs' collective practices showed promise of engaging farmers in a sustained manner to address issues in farmer communication and ownership. On farmers' issues that lie beyond FFs' purview, the outputs of their practices seemed to offer resources for the FFs to resolve or represent the issues effectively. Thus, FOs played a critical role in communicating implementation challenges to the project management and identifying workable solutions.

In the next chapter, I discuss the study findings under each research question. I then follow with a discussion of the conclusions drawn from the research findings, implications for practice, 'what I did not learn from the study', and questions for further research.

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

This study took place in a project that aimed to create greater preparedness of rural communities to face the inevitability of climate change. Creating preparedness requires sustained efforts to build local knowledge and practices, introducing new skills and information and changing attitudes. The study demonstrated that collective planning, observation, reflection, and documentation assisted FFs to act purposefully to improve communication with farmers by ensuring continuity between trainings, identifying implementation issues, and engaging insiders—i.e. FFs in a field unit—and outsiders—both farmers and project management—to identify feasible solutions to address implementation issues. These processes were found to be critical for engaging farmers in a sustained manner to build their individual and collective capacities to make informed decisions and build community preparedness to adapt to climate change and variability.

In this concluding chapter, I begin with a discussion of the conceptual framework and then discuss the study findings organized by each research question. Later, I discuss the conclusions drawn from the research findings and implications for practice. I end the chapter with a discussion on ‘what I did not learn from the study’ and questions for further research.

Study Findings

Participatory approaches call for active participation of local stakeholders in the development processes. Facilitating effective local participation calls for understanding of local realities. To understand the local realities and what works in the local situation,

field facilitators need to be open to learning the specifics of the local context from farmers and community members who may be less educated and who articulate their knowledge in non-academic ways. This calls for developing relations based on understanding, mutual respect and trust between FFs and farmers. Understanding and appreciating local knowledge, experiences, values, interests, and resources requires FFs to invest time and energy. The communities of practice theory provides the framework and tools for FFs to develop a deeper understanding of their interactions with farmers, and identify effective ways of building farmers' capacities, through improving and strengthening of FFs' collective practices.

In the project setting, field facilitators had a shared interest to improve farmers' knowledge and skills, and to change farmers' attitudes. In pursuit of this, they collectively developed plans for farmer trainings, learned new or improved existing skills for more effective delivery of training content, and implemented and followed up on farmer trainings. The characteristics of a community of practice were found to be present in FFs' ongoing work to a very limited degree prior to the action research portion of the study. The action research intervention assisted FFs working in the two field units to cultivate their community of practice by introducing them to a set of collective practices—collective planning, observing, reflecting, and documenting farmer capacity building activities. These practices created a “rhythm” for the FFs' community of practice, facilitated a “dialogue” on the inside amongst the FFs, and facilitated a “dialogue” with outsiders—farmers and project management—all of which resulted in improved farmer training outcomes. The process built on FFs' current practices and encouraged them to improve coordination and sharing of tasks amongst themselves

through collective planning and implementation and strengthened ongoing farmer training practices through peer-to-peer feedback and collective reflections. Additionally, FFs' collective reflections helped identify the "value" of their collective practices in improving their communication with farmers.

Wenger, Trayner, and Laats (2011) framework on 'value creation in communities and networks' helped assess the "immediate", "potential", "applied", and "realized" value of FFs' community of practice through reviewing multiple sets of data generated by the study to portray a holistic picture of the value that the FFs' community of practice created for them and for the farmer participants. Here I summarize the findings of the study under each research question.

How did the action research interventions influence the way FFs and farmers communicated and worked together, according to FFs and farmers?

At the beginning of the SPACC project, both farmers and FFs were positive about their communications and working relationships with each other carrying over from the earlier APFAGMS project. In our baseline discussions with farmer participants from both field units, farmers acknowledged the relevance of APFAMGS project inputs. Also, they said that they shared their experiences (previous experiences and field experiments) during farmer trainings. FFs also reported that they learned from farmers. This signified that FFs valued farmers' experience and knowledge. However, my co-researcher's and my visits to project sites and follow-up discussions with farmers and field facilitators revealed that there were lapses in the groundwater management practices farmers had implemented during the previous project. Local-level farmer institutions were observed

as being passive in addressing maintenance issues of data collection equipment and deepening of wells in their hydrological units. Rather than sustaining farmers' interest in data collection through "dialogue" that focused on the relevance of data to farmers in crop-water management and the importance of institutional monitoring of data collection, FFs felt that providing material or financial incentives to farmer participants could have enhanced their commitment and ensured greater consistency in data collection. But providing material or financial incentives to farmer participants contradicted with the project objectives of farmer volunteerism. The project's view that the recognition and respect farmers' gain within their communities for collecting and disseminating data would sustain their motivation in data collection wasn't effective on the ground and it appeared that the FFs too did not concur with the project's objective.. This demonstrated that the dialogue amongst FFs within each field unit and between the field units and project management needed to be improved to identify effective strategies to improve farmer participation and ownership of essential data collection.

Following the action research intervention, FFs felt that use of collective practices in planning and implementing farmer trainings led to greater clarity in FFs' roles and responsibilities. FFs said that facilitation skills of all team members improved as they prepared the facilitation tasks assigned to them ahead of time. This led to improved confidence amongst FF team members. As a result, FFs were able to interact more easily and effectively with farmers during and after trainings. Additionally, they said that collective planning led to discussing field realities and farmer needs. FFs reported instances of making changes to the training plans and methods in response to feedback from farmer participants. This helped FFs to better achieve the planned objectives, and

training sessions were implemented more effectively. FFs also shared that following the vision-building workshop, farmer volunteers showed increased initiative in the upkeep of the Participatory Climate Monitoring (PCM) stations and data collection. Participation of women farmers in CCAC meetings and activities improved. Additionally, FFs shared with us that reflecting on and documenting training activities led to continuity between training events. Further, FFs felt that collective planning, observing, and reflecting improved camaraderie amongst FFs.

FFs' reports provided strong evidence of documenting training events. Also, the reports demonstrated that issues identified during reflections sessions after a training event were addressed in a subsequent training event. Instances of FFs following up on farmers' requests for additional information and materials to illustrate the concepts of climate change and variability were documented in FFs' reports. Also, the reports documented that FFs' efforts to improve farmers' attendance were successful. FFs reported that they referred to the previous report when planning for a training event. Thus, the reports had an "applied value" as they served as a future reference and ensured continuity between training events. It was also observed that FFs used documentation from previous training events to orient new project staff.

Review of the FFs' reports confirmed that they used the observation checklist to record their observations on the facilitation skills of their peers. Also, the reverse side of some of the observation checklists contained suggestions on ways to improve facilitation. As a separate observation checklist was used for each facilitator, this helped provide specific feedback to a particular facilitator. FFs' use of the observation checklist to provide peer-to-peer feedback helped them improve their facilitation over time.

In the post-intervention focus group discussions, farmers said that they appreciated the use of non-formal education methods in the trainings as doing so helped them develop a better understanding of technical concepts. Women participants, in particular, stated that they liked small group discussions as that particular method allowed them to share their experiences and views more freely and openly. Farmers also appreciated opportunities to share their experiences and views. Small group discussions also provided opportunity for literate farmers to document the discussion outputs and present them in the large group. Farmers perceived such opportunities as valuing their knowledge and experience—a key principle of andragogy (Knowles, 1978).

The data provided strong evidence data that collective planning, observing, reflecting, and documenting improved FFs' facilitation skills, led to development of realistic plans, and improved farmer participation and training outcomes. The above discussion indicates that FFs' collective practices have improved the communication between FFs and farmers and their working relationships with each other.

How did the action research interventions influence farmers' ownership of groundwater management and weather monitoring, according to FFs and farmers?

In pre-intervention interviews, farmer participants who had previously participated in the Farmer Water Schools (FWS), acknowledged the relevance of APFAMGS project inputs. This was attributed to the timeliness of the inputs, as farmers were experiencing a sense of helplessness because of their inability to comprehend groundwater dynamics and that poor crop-water management led to frequent crop losses. Farmers acknowledged that they had made changes in crop-water management practices.

They reported that they monitored groundwater levels, estimated groundwater balance and made decisions on which crops to plant accordingly. Farmers explained that they now grew irrigated dry crops. All of this demonstrated that farmers made more informed decisions on crop choices and crop-water management than they had in the past. Further, farmers stated that with the PHM equipment provided by the project they were able to estimate the groundwater draft and recharge. Farmers said that they had turned from fatalism—sow after the first rains and pray to the rain god—to pragmatism. However, my co-researcher's and my visits to project sites and follow-up discussions with farmers and field facilitators during baseline data collection revealed that there were lapses in the groundwater management practices farmers had implemented during the previous project. Project staff observed that local level farmer institutions were passive in addressing maintenance issues of data collection equipment and deepening of wells in their hydrological units.

Between September 2011 and October 2012 FFs implemented a series of capacity building activities to build the institutional strength of CCACs and to increase their awareness of the concepts of climate change and variability and the need to adapt to climate variability.

Farmer participants, during the post-intervention focus group discussions, reported that the vision building exercise improved members' awareness of past activities and helped them visualize CCAC goals for the next three years—an “immediate value”. Additionally, farmers said that the outputs of the exercise provided direction to the CCAC members and helped them develop an action plan for the ensuing year for their CCAC—an “applied value”. Further, they believed that the action plan had the “potential

value” as it clearly specified the activities to be accomplished each month and thus served as a tool to monitor and review progress.

Farmer participants reported that aligning roles and responsibilities of office bearers with goals and objectives of the CCAC had led to greater clarity and more appropriate implementation of activities. Farmer participants, who were office bearers either at the village or HU level, expressed that they could identify their particular responsibilities in data collection and dissemination. Further, they felt that differentiation of the roles and responsibilities helped ensure that one or two individuals were not burdened with the entire workload. Farmer participants felt that the sub-committees ensured more effective monitoring and quicker flow of information on specific activities to the HU-CCAC, as it was easier for a smaller number of CCAC members to meet. Farmer participants expressed that sub-committee members recognized—“potential value”—the importance of their roles, monitored the work assigned to them and brought to the attention of the HU Executive Committee problems and issues in implementation. This helped the HU-CCAC members to deliberate and make decisions for more effective implementation than before.

Farmers acknowledged the “immediate value” of the training inputs as the inputs improved their knowledge and led to more informed decisions and improved practices. Farmers’ responses indicated that they were well informed and had an in-depth understanding of the process. Farmers opined that these activities had an “applied value” as it helped them stay focused and implement activities in accordance with projected goals. It appeared that the trainings had a “potential value” as the process and output

invigorated CCAC members, which led to a “realized value” of improved farmer participation and ownership in the upkeep of PCM stations and data collection.

FFs opined that their collective practices aside from building their skills and improving delivery of the training content led to better interactions with farmer participants and resulted in improved farmer participation in CCAC activities. FFs shared numerous examples of farmer participants demonstrating increased initiative in the maintenance of the Participatory Climate Monitoring (PCM) stations and regular collection of data. Further, participation of women farmers in CCAC meetings and activities had improved. Also, FFs reported that CCAC office bearers had become more proactive in the transaction of the day-to-day business of the CCAC. This also ensured regular data collection and dissemination on key climate parameters, which was critical for farmers to make informed decisions on their crops. This showed a marked improvement in farmers’ participation in CCAC activities.

The CCAC capacity building activities implemented following the action research intervention made the farmers feel recognized and empowered. All this led to the “realized value” of improved farmer participation. Thus, the initial outcomes of FFs’ collective practices showed promise of engaging farmers in a sustained manner to address issues in farmer participation and ownership.

What other factors influenced FFs' and farmers' communications and work with each other, and influenced farmers' ownership of groundwater management and weather monitoring?

FFs, in general, were positive about their participation in the community of practice. When specifically asked to identify constraints in continuing key elements of their community of practice for future planning in the post-intervention focus group discussions, FFs reported that finding time and energy to continue collective practices was a challenge because these activities were added to their existing workload. FFs reported that documentation increased their workload. They acknowledged that writing reports was somewhat difficult, and not all FFs had equivalent skills to do so, being more accustomed to sharing their experiences orally rather than in writing. Also, FFs reported that they needed to improve their use of the observation checklist. This highlighted the importance of a work environment that is conducive to FFs' continued practice of collective planning, reflecting, and documenting in the design and implementation of farmer trainings.

The support of FOs, in particular, was invaluable in initiating and sustaining these collective practices amongst FFs during and after the research period. They openly encouraged the FFs to engage in collective planning and reflection. Additionally, FOs in both field units participated in the FFs' collective reflection and provided guidance to the FFs in preparation of the training reports. Further, FOs reviewed the feedback that my co-researcher and I provided to the FFs on the training reports and ensured that FFs addressed those points in future reports. Thus, FOs' leadership was critical for continuity of practice.

FOs supported these practices as they believed the practices had the “potential value” to improve FFs’ training skills and practices and, as a result, increase and sustain farmer participation. The usefulness of the outcomes of the practices in field officers’ day-to-day project work was important for their buy-in. FOs shared that participating in the field visit reflection exercise helped them get a perspective on how things went in the field and what kinds of support the FFs needed. Further, the field officers shared that the observation checklist helped them to identify individual strengths, assign responsibilities, and develop a capacity building plan for the FFs. In the post-intervention reflections, field officers shared that improved documentation, an output of FFs’ collective practices, had an “immediate value” as it made it easier for FOs to monitor and review implementation. Additionally, FFs’ reflections and documentation of farmer training activities came in handy for field officers to present farmer participation issues effectively to the project management. FOs’ support remained critical to mentoring FFs to continue with the collective practices.

Despite farmers valuing knowledge and skills gained from participating in trainings, other factors influenced farmers communication and work with FFs and farmers’ ownership of groundwater management and monitoring of weather parameters. Farmer participants shared that they held back from sharing experiences and opinions as they were nervous that other farmers might mistake their actions and become critical of them as a result. This situation appeared to be more challenging for women farmers. Farmers also pointed out that erratic power supply, labor shortages and other demands on their time affected how they communicated in trainings. As a result, farmers sometimes turned up late or left early. However, they often regretted that early departure from a

training session reduced the time left for small group discussions. Another issue that impacted farmers' attendance and communication was that of transportation. Some of the habitations were remote and regular transportation was not available. Therefore, farmers found it difficult to reach the training venue on time. FFs shared with us that those farmers who reached the training venue ahead of others felt frustrated and were anxious to return to their work. This affected their participation in discussions. Aside from the above constraints to communication, the practice of compensating farmers for their participation in trainings seemed to undermine the principle that farmers participate in the trainings to learn useful information.

Implications for Practice

Several key issues emerged during the action research intervention that had a defining impact on field facilitators' and farmers' ways of communicating with each other and working together. The action research intervention allowed the field facilitators, farmers and the research team to develop responses to each key issue. Implications for future practice include integrating the following as intentional objectives into the design for new projects similar to that in which the research took place:

- Cultivating communities of practice among agricultural field facilitators has demonstrable benefits in improving communications and work with farmers;
- Collective planning improves understanding of individual field facilitator's roles and responsibilities as well as the collective roles and responsibilities in a larger community of practice;

- Use of reflection on processes and outcomes from training and field interactions with farmers ensures better continuity in engaging farmers;
- Providing strong support to FFs in sustained use of collective practices in engaging farmers can translate into increased farmer participation and improved farmer ownership;
- Buy-in of the local manager (field officer) is critical for initiating and sustaining the collective practices that cultivate a community of practice;
- Including the development of collective practices in FFs' job description could facilitate formation of community of practice and sustain it;
- Ensuring that the number of FFs is proportional to the tasks and field unit operational area could provide FFs the space and time to engage in collective practices;
- Field facilitators need sustained support as they experiment with new tools and practices and integrate these tools and practices into their everyday work tasks;
- Field facilitators appreciate being valued by their supervisors and that such recognition is important in institutionalizing new practices into one's personal work and cultivating a community of practice among field facilitators;
- Building on current knowledge and practices is not only the most appropriate place to begin, but makes the participants (FFs and farmers) feel recognized and leads to ownership of the content and practices being introduced;
- Non-formal education training methods are effective in giving voice to women farmers;

- It is necessary to frequently check in on and verify the status of farmer motivation to engage in activities that aim to strengthen their preparedness to climate change;
- Providing adequate time and sustained support over time to FFs is important for them to experiment with new approaches to their work, new roles and responsibilities, new ways of documenting project outcomes, and assessing their individual and collective attainment of project goals and objectives;
- Action research is an effective means of identifying constraints in an on-going project, engaging project staff and project participants in on-the-ground research activities that identify solutions which contribute to increasing the effectiveness of both project staff and farmers in meeting project goals and objectives; and
- Project activities can empower field facilitators and farmers to use a project as a means to surface constraints in implementation and collectively identify and study possible ways to tackle the constraints to sustain interest of key project players over time.

What I Did Not Learn from the Study

A few questions remain unaddressed to develop a deeper understanding of the impact of FFs' community of practice in improving their communication and work with farmers and farmers' ownership of groundwater management and weather monitoring.

- The study did not adequately assess the issue of social distance between project staff and farmers, and in particular that of project staff (field facilitators) working most closely with farmers. Greater farmer initiative and

ownership of climate change preparedness will need much more farmer confidence building and less intervention by project staff.

- Also, the study did not adequately assess the issue of FFs' motivation to continue to use the collective practices after the project came to an end.
- Further, the study did not investigate additional tools and supports that FFs might need to strengthen and sustain their community of practice, and improve their communication and work with farmers.
- Furthermore, the study did not assess buy-in, or how to develop ownership, on the part of senior management for the development and institutionalization of the communities of practice concept.

Questions for Further Research

The issues suggested here for further research are not listed in any particular order as each of the suggested areas is extremely interdependent. The study demonstrated that FFs' collective practices led to development of a shared repertoire of skills and resources, improved their training skills, strengthened relationships amongst team members, and contributed to a nascent community of practice among field facilitators. Longer-term research could reveal whether these initial outcomes translated into the development of a strong community of practice among field facilitators that in turn led to sustained farmer ownership of project inputs and outcomes.

Additionally, the study findings indicated that Field Officers found the outputs of FFs' collective practices useful as it provided them with higher quality information on project implementation. The same research model could be used with Field Officers or

Project Scientists to study the effectiveness of communities of practice on the quality of their interactions with field facilitators, its consequences on interactions between field facilitators, farmers, and farmer organizations; and document changes in practices and perceptions of Field Officers and Project Scientists.

This study confirmed the value of taking an action research approach to solving problems within a project. If one were to go forward in examining these kinds of interactions that now involve higher levels of project management, one could envision at least two potential research questions for further study that are based on an action research approach. These are:

1. What kind of training and orientation is needed for Field Officers and Project Scientists to have these key management positions support the development of communities of practice amongst field facilitators, thus ensuring that all levels of project staff are included in the development of and support for FFs playing their key role in project implementation?
2. What kind of processes and content are needed in the development of communities of practice at a higher level in project management, thus ensuring that all levels of project management are supportive of innovations like “communities of practice” in similar projects?

Furthermore, one could envision additional research that would use an action research approach to:

- What are possible solutions to issues affecting FFs’ and farmers’ communication and abilities to work together more efficiently and effectively

to further develop climate change preparedness or other agriculture innovations?

- What new approaches and methods could motivate farmers and other community members to collectively work to find ways to build community preparedness to climate change and mitigate the negative impact of climate change over time?
- What is the level of farmers' ownership of processes and mastery of technologies needed to sustain practices and build community resilience to climate change when projects come to an end, or when there is a lapse in time between projects?

The study demonstrated that FFs were willing to take up additional tasks and collective practices when they saw immediate value to what was being introduced. Given the length of the research, it was less clear about FFs' motivation to continue to use those collective practices after the project came to an end. An important issue in need of further research is:

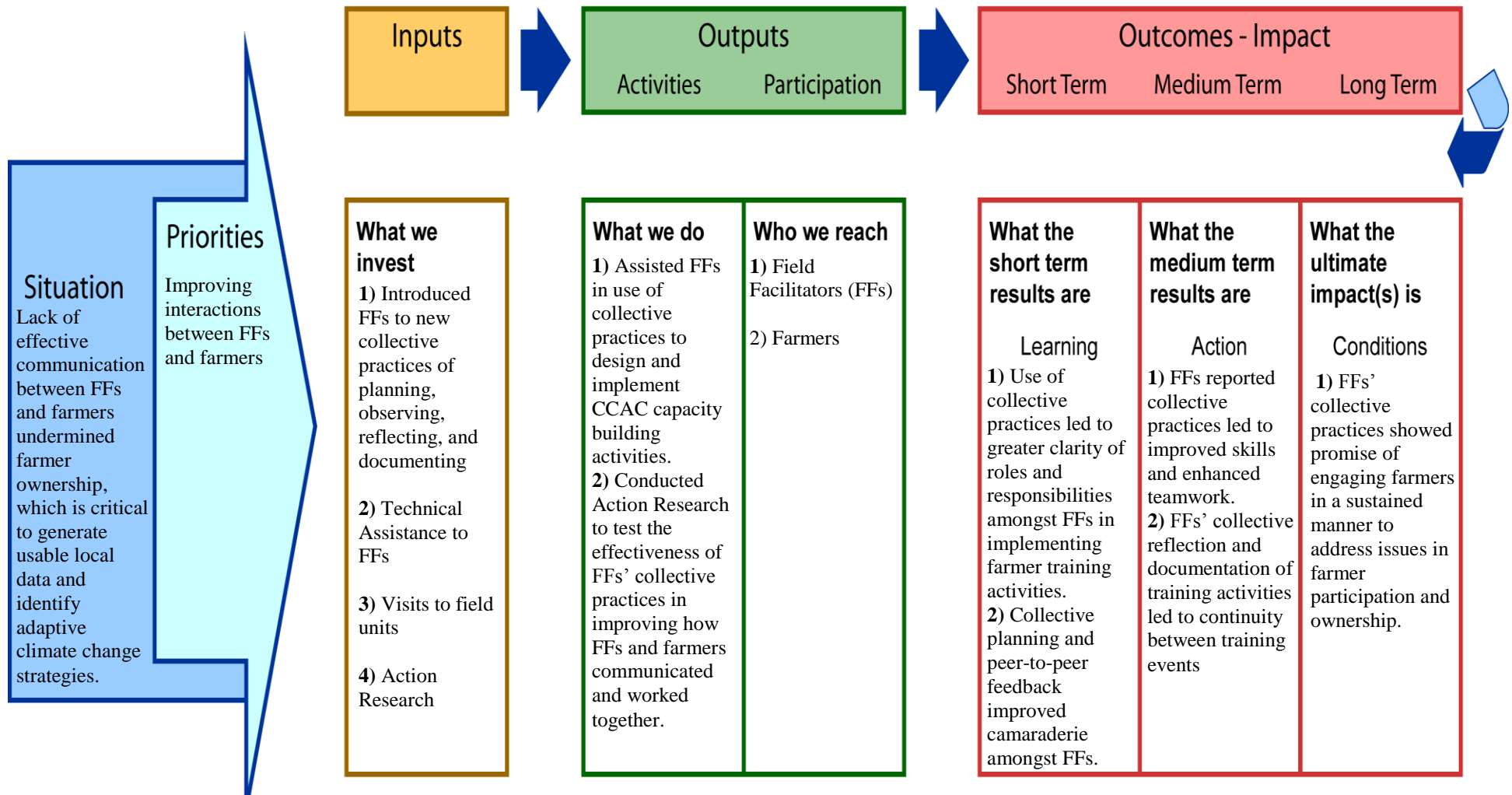
- What is the role of rewards (recognition of a job well done, increased responsibility, promotion, increased salary due to promotion) on FFs' receptivity to participation and integration of innovations into their practice and work?

The evaluation designs which one finds in projects similar to the SPACC project are often not flexible, participatory, or user friendly. Research is needed to help identify how to make project evaluation designs more responsive to project goals and objectives, keeping in mind that those individuals charged with day-to-day monitoring and

assessment activities are those with the least amount of training in monitoring and evaluation methodology. This calls for the development of more user-friendly monitoring and evaluation tools and activities and the use of evaluation data to inform changes in project design, while projects are being implemented. One could imagine a research question along the lines of the following:

- What kind of project-wide evaluation design, tools and practices are needed to assess the impact of improved FFs' interactions (e.g., use of new collective practices) on farmers' participation and ownership of new technical content and practices?

A. DISSERTATION LOGIC MODEL²⁷



²⁷ Adapted from the University of Wisconsin-Extension Logic Model

B. FIELD FACILITATORS' (FFs') PLANNING FORMAT

Date:

Venue:

Activity	Responsibility	Materials required	Assistance needed	Time

C. FIELD FACILITATORS' (FFs') REPORTING FORMAT

- Date
- Venue
- Objectives of the training / meeting
- Activities planned and roles (specify roles and responsibility for each sub-activity)
- Materials used
- Observation Checklist (one observation checklist for each FF facilitating)
- Objectives achieved
- Issues that need to be addressed
- Learning
- Follow-up Plan and Strategy

D. FIELD FACILITATORS' (FFs') OBSERVATION CHECKLIST

	QUALITATIVE INDICATORS	No	Need to improve	Fair	Good	Very Good
1	<i>Arrangements</i>					
	Farmer participants are comfortably seated					
2	<i>Facilitation: Facilitator</i>					
	Shares session objectives with the participants					
	Shares session plan with the participants					
	Recaps previous session at the start of the session					
	Poses probing questions (what, why & how)					
	Encourages farmers to ask questions					
	Responds/answers farmers questions respectfully					
	Invites farmers to demonstrate/share their experiences					
	Uses locally relevant examples					
	Uses appropriate visuals/specimens					
	Ensures continuity/smooth transition between topics					
	Reviews participants learning at the end of the session					
	Gives adequate time to facilitate each content					
	Discusses ways of improving the facilitation					
3	<i>Participants: CCAC members</i>					
	Record farmer attendance					
	Document session proceedings					
	Evaluate the session					

	QUANTITATIVE INDICATORS	Women	Men	Total
	No. of participants attending the session			
	No. of questions asked by the CCAC members			
	Duration of the session			

E. PNGOs AND FIELD UNIT LOCATIONS

PNGOs Names	Field Units (town, district)
Bharathi Integrated Rural Development Society (BIRDS)	Allagadda, Kurnool
Center for Applied Research and Extension (CARE)	Achampet, Mahbubnagar
Collective Activity for Rejuvenation of Village Arts and Environment (CARVE)	Markapur, Prakasam
Development Initiatives and People's Action (DIPA)	Giddalur, Prakasam
Gram Vikas Samstha (GVS)	Madanapalle, Chittoor
People's Activity and Rural Technology Nurturing Ecological Rejuvenation (PARTNER)	Porumamilla, Kadapa
Social Awareness for Integrated Development (SAID)	Miryalaguda, Nalgoda
Society for Sustainable Agriculture And Forest Ecology (SAFE)	Cumbhum, Prakasam
Star Youth Association (SYA)	Guthi, Anantapur

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